BRITISH COLUMBIA'S

Planning for the Future

MANAGING WILDLIFE TO 2001: A DISCUSSION PAPER

BC Environment

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MANAGING WILDLIFE TO 2001:

A DISCUSSION PAPER

We welcome your comments on *Managing Wildlife to 2001*

This document has been prepared for discussion purposes and all proposals outlined are subject to change based on public input. The government is committed to responding to public comment to this document and to implementing wildlife management objectives that are based on those comments.

You can reach us in the following ways:

- By filling in and sending the questionnaire included with this document.
- Through a written submission, either as an individual or as a group.
- By taking part in one of the public meetings to be held throughout the province.

Please send your comments by October 31, 1991 to:

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PREFACE

British Columbia is blessed with outstanding wildlife that provides many cultural, spiritual and economic rewards — to our own people, and to visitors from across the world. But the fate of that valuable resource is in question. Wildlife and their habitats are threatened by many pressures, such as urbanization, natural resource extraction and industrial development.

Managing Wildlife to 2001 *confronts the issues jeopardizing wildlife and proposes major management initiatives to ensure a sound and sustainable resource. Under this "umbrella" document, the Wildlife Program will release other key planning products, including regional wildlife plans, provincial species statements and a land management strategy.*

This discussion paper reflects B.C. Environment's solid commitment to the principle of "sustainable development." In other words, we believe that strong economic activity is very important, but it must be pursued within the limits required for a healthy environment and plentiful natural resources. That is the path to both a vibrant economy fueled by a continuing supply of resources, and a thriving, beautiful environment.

With respect to the wildlife resource, the concept of sustainable development translates into maintaining the integrity of natural ecosystems and making sure that the various uses of wildlife do not exceed the resource's ability to replenish itself.

Managing Wildlife to 2001 *is one of several documents on resource management that different programs in B.C. Environment are developing (or have already issued), under the banner of* British Columbia's Environment: Planning for the Future. *The papers are aimed at protecting and enriching the province's major resources, including our wildlife, fisheries, water and air. They all focus on assuring the long-term ecological health of the specific resource in question, through assertive action and public involvement.*

B.C. Environment is committed to dealing with the difficult environmental challenges of the 1990s in a framework of consultation and partnership — not only within government, but also with the public, and key stakeholders in the resource. With that in mind, we welcome your views and comments on Managing Wildlife to 2001. *Your ideas on how we can preserve and revitalize our magnificent wildlife resource will help to shape the direction and work of the Wildlife Program in the years to come.*

ACKNOWLEDGMENTS

This discussion paper is the result of the combined efforts of many people in B.C. Environment and, in particular, the Wildlife Program. Two different groups were formed to examine the critical issues facing the program today. They then developed the strategic and working goals, challenges, program activities and strategies to address such issues.

Participants were:

> Lynn Bailey, Don Eastman, Andrew Harcombe, Fred Harper, Rodger Hunter, Bruce Pendergast, Gordon Prouse, Ben van Drimmelen, Jim Walker, Nancy Wilkin and Tom Wood.

The goal statements were discussed in two workshops — one attended by the wildlife management biologists and technicians, and the other by the habitat protection biologists and technicians.

The draft was written by Lynn Bailey, Andrew Harcombe, Jim Walker, Nancy Wilkin and Tom Wood, and typed by Lynne Foxall. It was sent to all wildlife and habitat protection staff, many of whom provided valuable comments.

The conscientious work of all those people culminated in the present document, which was organized and edited by Dennis Demarchi and Liz Williams. The lists in the appendices were typed by Dauna Walker and Helen Debois. Gail Harcombe prepared the figures. Andrea Careless did the final editing and prepared the document for publication.

Rick Thomas created the pictures of wildlife tracks. The cover page was designed by The Malahat Group.

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1

INTRODUCTION

A. The Challenge of Managing Wildlife in the 1990s

British Columbia is a favoured land — in a world that is rapidly losing its wildlife to environmental ills, resource depletion and urbanization. We still have magnificent and abundant wildlife. There is no denying that the resource faces real and urgent problems. But we still have a good chance to preserve it as a rich, living legacy for future British Columbians.

The value of a dynamic wildlife resource goes far beyond sentimentality and economics. It creates a vital link between human beings and the natural world, and allows for cultural continuity. Securing our wildlife heritage and maintaining those values will not be easy. But the challenge is infinitely worthwhile — one we *can* meet through strong and responsible stewardship.

People across this province recognize that our wildlife resource is a treasure to be cherished and protected. In a 1987 national survey,[1] for example, 87 percent of British Columbians stated that maintaining plentiful wildlife was important to them. And 89 percent felt that endangered species should be preserved. That compares with national averages of 83 percent and 85 percent, respectively.

We must clear some substantial hurdles if we are to conserve our wildlife, however. Wildlife and their habitats are endangered by urban growth, industrialization, logging, mining, agriculture and other resource uses. Intensifying those pressures are the conflicting demands of a growing variety of user groups — from Native people and other hunters, trappers and guide outfitters, to people who simply want to watch and learn from wildlife.

It is time that we as a society change how we perceive, use and manage wildlife. Such an evolution is necessary to ensure that accelerating development and population growth do not erode the diversity and abundance of the resource.

It is just as crucial to reduce the confrontation over wildlife use and to redirect British Columbians' concern and energy to activities that will benefit the resource. The government also must provide greater opportunities for public input. Specifically, wildlife managers need to become more open to public opinions on what constitutes acceptable use and management.

Responsibility for British Columbia's wildlife falls primarily to the Wildlife Program in B.C. Environment. The challenges facing the program right now are driven by some tough political and economic facts of life. These are times of greatly increasing pressures on wildlife and on the land's ability to sustain it. However, British Columbia's wildlife managers have little influence on many international and global problems, such as the buildup of greenhouse gases, depletion of the ozone layer and chemical poisoning of the earth's oceans.

These are also times when citizens throughout the western world are rebelling at the concept of big government. They are challenging the political institutions to involve the private sector in functions that traditionally have been carried out by government.

Across North America, wildlife agencies do not have enough funding and staff to obtain adequate inventory information on populations and habitats — the cornerstone of all wildlife management programs. The reduction in management capability has other effects, too:

- Less research.
- Limited monitoring of how changes in land use affect wildlife, and of the effectiveness of management prescriptions.
- A narrowing of focus to a small number of wildlife species in areas easily accessible to operation centres.

One result is that wildlife managers are forced daily, in the absence of good scientific information, to make decisions based solely on experience and their best judgement. Those are essential ingredients, but not enough. The outcome is that management has become much more conservative, with a real cost to wildlife users in terms of foregone opportunities.

There is also a cost to other resource sectors. For instance, without adequate inventory information, habitat protection recommendations to the forest industry tend to be extremely cautious, to make sure that any damage to wildlife is minimized. That can substantially decrease the amount of forest land provided for harvesting. It can also intensify the operational constraints on logging practices, with financial losses for the industry. On Vancouver Island, for example, about 40,000 hectares of old-growth forests have been reserved from harvesting, to protect elk and deer winter ranges.

On the other hand, increased knowledge may indicate the need for no resource development. Regardless of the outcome, the principle remains the same: the more that is known about a species and its habitat requirements, the more accurate the Wildlife Program can be with its recommendations to industry.

The program's mandate is to manage wildlife for the benefit of all citizens, present and future. That requires constant and close communication with the public, other agencies and industry, as well as periodic re-evaluation and revision of existing management strategies. It is a particularly important responsibility since industrial and urban development are now altering wildlife habitat at an unprecedented rate.

B. An Outline of this Discussion Paper

Managing Wildlife to 2001 proposes the management direction for the Wildlife Program. It has the following objectives:

1. To inform the public, other resource agencies and industries on the status and value of the wildlife resource, and the problems it will face in the years to come.

2. To provide the public, other resource agencies and industries with an opportunity to comment on the overall direction of management.

3. To prepare a strategy for managing wildlife to the year 2001.

Before discussing new directions in wildlife management, we will take a brief look at the kinds of wildlife and habitat in this province — the topic of the following section. In the remainder of chapter 1, we will discuss how wildlife management has evolved and consider why changes are now essential.

Having "set the scene," we will then move on to considering the Wildlife Program's goals for strong stewardship in the '90s (chapter 2). The goals rest firmly on B.C. Environment's mission and on a number of important general principles which guide the Wildlife Program. Those will be examined in the same chapter.

It is important to "get down to specifics" and talk about how we can turn the new goals into more concrete challenges and actions. Before doing that, though, we need to better understand the management powers, jurisdiction and funding of the Wildlife Program. Wildlife itself bears some thought: how much do we value it, and why? Similarly, how healthy and abundant is the resource and what is its prognosis? Those considerations are crucial before we propose specific strategies for managing wildlife. They form the focus of chapter 3.

"Getting down to specifics" begins in chapter 4. There, we elaborate on the Wildlife Program's broad goals by identifying six challenges that the program must work towards to ensure that B.C.'s wildlife is a sustainable, thriving resource. It is imperative that we "do more with less," in innovative and often untested ways, given a rapidly changing set of public demands on the resource. That principle underlies all six of the major challenges facing the Wildlife Program.

This discussion paper also develops policies to help agency decision makers apply legislation, without removing the element of discretion needed to deliver a sensitive, flexible service that fits local conditions. The need to develop new policies is identified under the appropriate challenge.

Finally, flowing out of those challenges are the many activities that the Wildlife Program needs to initiate. Both the challenges and activities are described in detail in the final chapters (5 to 10).

C. An Overview of B.C.'s Wildlife and Habitat

British Columbia occupies 95 million hectares, with a diverse physiography, climate, flora and fauna. Three of the four broad continental climatic regions are represented here — dry, humid temperate, and polar. The interaction of those three systems, combined with the province's seven basic land systems creates 14 distinct climates. The result is an extreme variation in vegetation zones, forming 10 "ecoprovinces" (appendix 1), represented by 83 regional ecosystems.[2] The variety of the wildlife resource, one of the richest in North America, arises from this interrelationship of land and climate.

More than 90 percent of British Columbia's wildlife has a strong link with terrestrial and freshwater systems. Most of our wildlife inhabit forests or grasslands. There are 630 species of vertebrates (excluding fish), comprised of the following:[3]

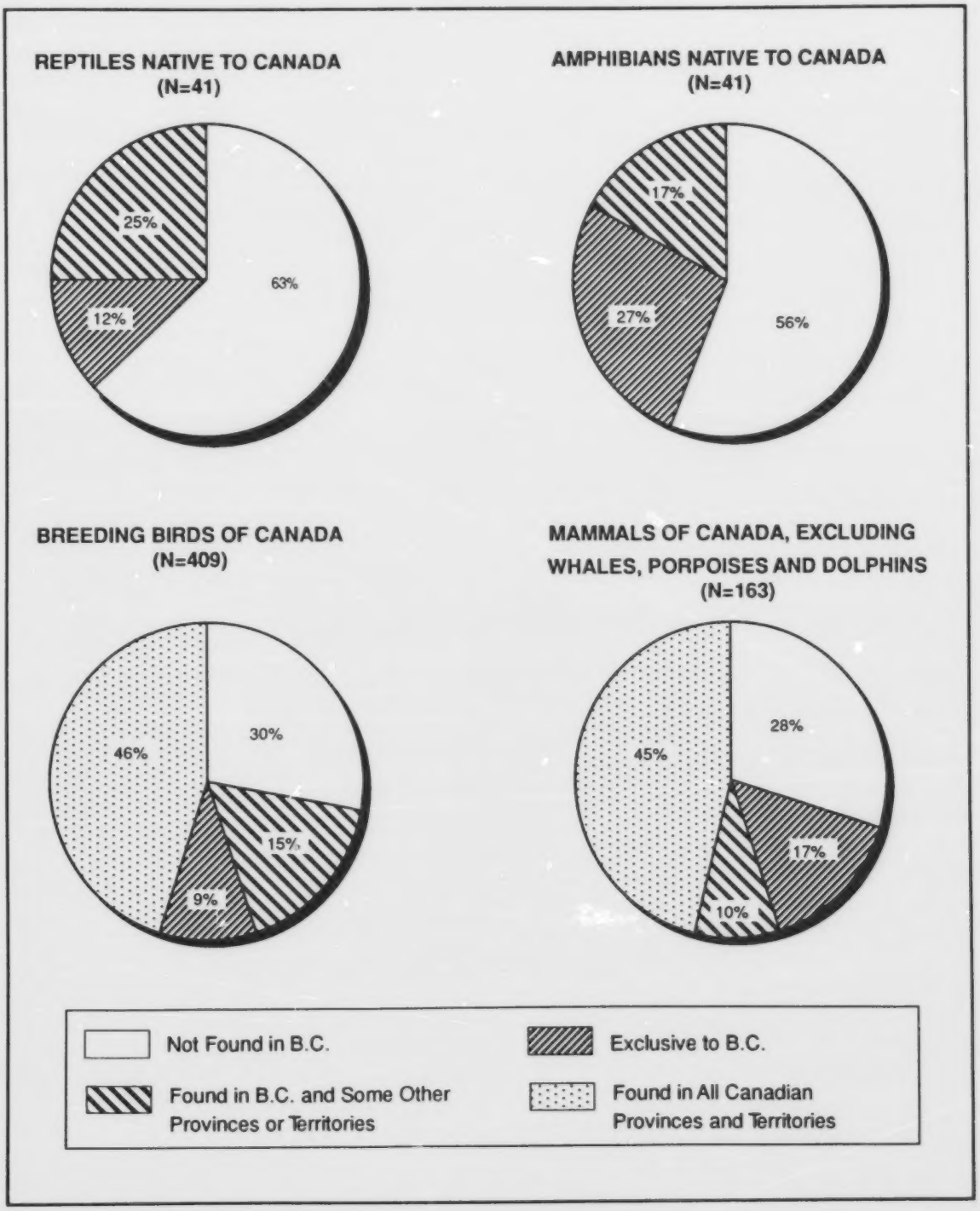
- 448 species of birds
- 143 species of mammals
- 19 species of reptiles
- 20 species of amphibians

Over 295 bird species breed in the province; 162 of those species (55 percent) breed nowhere else in the country.

Three-quarters of Canada's mammal species are found in British Columbia, and 24 of those species are exclusive to our province (figure 1). Additional species of vertebrates are regularly recorded here, as a result of expanding home ranges and more intensive searching by professional biologists and naturalists.

Figure 1

Percentage of Canadian Wildlife Species Found in B.C.



D. The Evolution of Wildlife Management in B.C.[4]

Before the arrival of Europeans and formal wildlife management programs, British Columbia's Native people depended heavily on the bountiful resources of the land and sea. Today, British Columbia has more than 120,000 Native people, most of whom still live on or near one of 1,650 reserves. All the reserves are strategically located on important fish and wildlife habitats and harvesting areas. Hunting, trapping, fishing and gathering are still practised by some Native people. This close interrelationship with Nature has a deep significance for their culture.

Formal wildlife management in North America began at the turn of the century. Concerns of conservation-minded citizens about the depletion of game species were translated into treaties and legislation to protect game animals and to regulate their harvest. Those initial developments in game management, largely the results of action by responsible sportsmen, have been maintained by public support for good conservation practices.

The year 1948 can be pinpointed as the start of scientific wildlife management in our province — when the first professional biologist was hired by the British Columbia Game Commission. As the name of the agency implied, emphasis was entirely on regulating the use of game and fur species. In those times, the major users of wildlife were hunters and trappers who paid for their use through licence fees and royalties.

In the "good old days," when resources were thought to be limitless, little attention was paid to wildlife habitat. By the 1960s, however, resource development had become highly mechanized, major industrial development projects were commonplace, and wildlife managers were becoming increasingly involved in protecting habitat. Still, the emphasis was on game species. By preserving habitat for deer, bighorn sheep or geese, it was assumed that most other creatures would benefit. To be fair, the small staff of the British Columbia Fish and Game Branch had little time to manage the animals that no one appeared to be utilizing.

As late as the 1970s, management effort in North America still focused on game species. There was neither the demand nor the money to spur wildlife agencies to expand their emphasis and include a broader spectrum of wildlife values.

Complex demographic changes since World War II have drastically altered patterns of wildlife use. As more and more people move to urban centres, wildlife habitats are being altered and destroyed, causing the population decline of many species. Hunting opportunities near cities are also diminishing.

The urban experience — with milk in cartons and meat on plastic trays — has distanced most people from direct contact with the natural world and its living resources. Interest in hunting recreation has waned across much of North America. But city dwellers have not lost their appreciation of wildlife; many of them want to

use and experience wildlife in more passive ways. Their demands for more wildlife programs that are not specifically oriented to hunting have begun to affect management agencies. In fact, some members of that group are completely opposed to hunting.

The "deep-ecology" view is also gaining popularity. It emphasizes that all life is important and has an equal right to exist, whether or not humans place a value on it. Deep ecology also holds that it is presumptuous to assume that some species, especially our own, are more valuable and deserving of attention than others.

In smaller urban centres and the country, people tend to follow more traditional lifestyles, which often include an interest in hunting. The demand for hunting opportunities and, indeed, the great upsurge in all types of wilderness recreation have intensified the pressures on wildlife species and their habitats.

As a result of all those factors, British Columbia's wildlife management program tries to reflect the interests and concerns of many different residents. In the Lower Mainland, parts of Vancouver Island, and the Okanagan, urban expansion and the influx of affluent urbanites to rural areas have extended the range of opinions on wildlife use and management. Wildlife managers do their best to tailor regional wildlife programs to satisfy such viewpoints.

With the growth in public concern about environmental issues, which first gained momentum in the 1970s, wildlife management agencies are not alone in recognizing their responsibility to preserve the diversity of wildlife species and their habitats. The spectrum of wildlife users is broadening and the public is demanding wildlife management programs for all species, not just those that can be hunted. More emphasis is being placed on protecting and managing entire ecosystems.

The Wildlife Program finds itself buffeted from all sides. There are the sportsmen, who acknowledge the need for expanding the scope of wildlife management, but also expect no reduction in attention to game species. They point out that hunters — more than any other group — pay for wildlife management through voluntary work, direct contributions and licence fees. In addition, the province has two very active industries that are based on the direct use of wildlife: guide outfitting and trapping. Native people are striving to retain significant portions of their distinctive cultures, which inextricably involve wildlife use. Finally, there is a growing body of citizens who wish to use and appreciate wildlife in ways other than hunting.

All those needs and demands are occurring against the background of a diminishing base of wildlife and habitat. We must be aware that our main focus is making sure that, whatever the demands on the resource, the ecological systems on which wildlife depend must be kept healthy and strong. That is, and will remain, the challenge — not only for the Wildlife Program, but for the government and people of British Columbia.

E. Changes to the Wildlife Program since the 1979 Wildlife Management Plan

In 1979, the *Proposed Wildlife Management Plan for British Columbia* was widely circulated and discussed throughout the province. The comments from public meetings, questionnaires and briefs were then condensed and published as the *Summary of Public Comment on the Proposed Wildlife Management Plan for British Columbia* (1980). The public's views were taken to heart and had a major influence on the direction of the provincial Wildlife Program in subsequent years. Some of the main influences are outlined below.

- Many people thought the proposed goals of the Wildlife Program in 1979 were too narrow. The goals were:

  1. To maintain the diversity of species representing the major biophysical zones of the province.

  2. To ensure that wildlife was abundant enough to meet society's recreational and economic needs, within the constraints of land capability and the biological limits of each species.

  Following the public hearings the goals were broadened. In this discussion paper they have been expanded still more.

- In order to better define "major biophysical zones" the Wildlife Program developed a regional ecosystem classification.[5] That system provides an overview of the ecological units of the province, identifying large areas of land with similar climatic processes, physiography, vegetation and wildlife. Various levels of the classification serve different planning needs. For example, the ecoprovince level (9 terrestrial units) is useful for developing provincial strategies on wildlife species and habitat management (see appendix 1).

- Game ranching of native wildlife was strongly opposed. A discussion paper was produced and, as a result, game farming — not ranching — was approved and restricted to fallow deer, bison and reindeer.

- Greater control over wildlife habitat was probably the most frequent recommendation. In 1981, B.C. Environment prepared a white paper on the Wildlife Act and circulated it for public discussion. One of the paper's suggestions was increased habitat protection. Consequently, the legislature passed a revised Wildlife Act in July 1982, with provisions for protecting nesting birds and creating Wildlife Management Areas.

- The 1982 act contained measures for stronger penalties on poaching and other violations. The government also implemented a regulation requiring the recovery of meat from harvested game animals.

- People asked for more habitat enhancement, leading to the institution of the Habitat Conservation Fund (HCF), in 1981. The fund is largely supported by a surcharge on angling, hunting and other licences. It is dedicated to supporting the enhancement of fish and wildlife and their habitat, and to related recreation and education.

- In 1990, all native terrestrial vertebrates and most feral exotic vertebrates were designated as wildlife under the current Wildlife Act. They have thus been given some protection, as many people requested.

- New initiatives addressing endangered species, nongame wildlife and wildlife viewing have been established. More program developments in those areas are in the offing.

- In 1985, the government employed habitat inventory staff to assess landforms, soils, vegetation, and wildlife use in a single ecological classification.

- Funding for wildlife management was another important issue. In 1978/79, the government spent about $4.5 million (1978 dollars) on the Wildlife Program, including enforcement. In 1990/91 the budget for the Wildlife Program was $10 million. An additional $8.5 million was allocated to enforcement under an expanded mandate to cover wildlife, fish and environmental legislation.

- Obviously, not all the comments of the public have been incorporated into the Wildlife Program. Since the *Proposed Wildlife Management Plan* was released in 1979, the public has shown a great deal more interest in environmental matters, including wildlife. Although traditional uses and users still create significant demands, there are now many people and groups who value wildlife for other, diverse reasons — for observation, study, photography or just for its own sake. Those interests are addressed in this discussion paper.

2

PROPOSED GOALS OF THE WILDLIFE PROGRAM

The ***mission*** of B.C. Environment is ***to manage, protect and enhance the environment for the benefit of current and future generations.*** In response to that mission and the public's changing needs and expectations, the Wildlife Program has updated its goals. The revised goals clearly state the program's role and are a reference point for gauging how well the program is meeting its responsibilities. They are also meant to act as a link between the program and British Columbians.

The proposed ***strategic goal*** of the Wildlife Program is:

Strategic Goal

To manage the province's wildlife resources for the benefit and enjoyment of British Columbians — by maintaining an optimal balance between ecological, cultural, economic and recreational needs.

The strategic goal is expanded in five ***working goals***:

Goal One

To maintain and enhance wildlife and their habitats, and thus ensure an abundant, diverse and self-sustaining wildlife resource throughout British Columbia.

Goal Two

To maintain, enhance and promote opportunities to appreciate, study and view wildlife in their habitats.

Goal Three

To maintain, enhance and promote recreational opportunities to hunt game species in their habitats.

Goal Four

To facilitate commercial uses of wildlife.

Goal Five

To protect people and their property from intolerable levels of danger, damage or harassment by wildlife.

Both the ministry's mission statement and the Wildlife Program's strategic goal embody the basic stewardship role and overall direction of the Wildlife Program. They recognize that wildlife has value for enjoyment and benefit to British Columbians and others, and that the varied uses of wildlife have to be in balance.

Goal One is the overriding priority of the Wildlife Program. It speaks of "wildlife for wildlife's sake," the all-important principle of environmental stewardship. Habitat protection or enhancement within the context of that goal aims at maintaining diversity and ensuring the continued survival of wildlife populations.

Goals Two, Three and Four set out the nature of the program's activities in relation to the various uses of wildlife. ***Goal Two*** — appreciative use — recognizes many people's desire to study, photograph or watch wildlife in their habitats. A major role of the program will be to provide an ever-increasing number of possibilities for such recreation. ***Goal Three*** acknowledges the Wildlife Program's traditional function of providing opportunities for recreational hunting, as well as managing populations and habitats to maintain healthy populations of game species. ***Goal Four*** stems from the fact that wildlife provides renewable and sustainable economic benefits to many rural areas, through trapping and guiding. The role of the program here is largely one of facilitation and setting standards, consistent with ***Goal One***.

Goal Five recognizes that wildlife can cause problems for people and their property. It underlines the program's obligation to provide reasonable levels of protection where wildlife and humans come into contact.

In addition to the mission and goals, and resulting challenges (to be discussed in chapter 4), a number of ***general principles*** guide the activities of the Wildlife Program:

General Principles

- ***Wildlife management is based on sound biological and ecological principles.***
- ***Classification systems for managing wildlife and its habitats recognize both the current use and the inherent capability of different ecosystems.***
- ***Management emphasis is on the health of ecological systems and their ability to support wildlife populations, rather than on the well-being of individual animals.***
- ***A wide range of uses of the wildlife resources is encouraged and accommodated, providing that the uses are ethical, humane and sustainable. However, no use which is judged to endanger the long-term viability of a species, population or habitat is allowed.***

- *Priority, but not exclusive, use of wildlife continues to be given to residents of British Columbia.*

- *The necessity for wildlife to share the land and water base with other users is recognized. Where possible, integrated use is practised. The single use of land for wildlife purposes is sought only where other uses are (or would be) unacceptably damaging to wildlife.*

- *Where possible, transplants of wildlife species are undertaken to reintroduce animals to their historic ranges.*

- *Management is focused on indigenous species. The import of non-native wildlife species is discouraged.*

- *The Wildlife Program dedicates areas for scientific study and public information purposes.*

- *The protection of threatened and endangered species is initially ensured using the standards set by the national Committee on the Status of Endangered Wildlife in Canada (COSEWIC).*

- *Effective protection is given to peripheral species (those whose range barely extends into the province), but they are not designated formally in British Columbia as "threatened" or "endangered" unless they are designated as such throughout their range. Peripheral species are considered to be of provincial management concern, and management efforts are directed towards preserving their habitats.*

- *The harvest of free-living, wild animals for the sale or barter of meat is not acceptable.*

- *Trade in parts (but not meat) of legally taken animals, and of captive raised and exotic animals, is only permitted under carefully controlled circumstances.*

- *Although the private possession of live wildlife is prevented or discouraged, the establishment of zoos providing suitable facilities for public viewing and education is supported. The capture of wildlife for zoos is largely prohibited; where allowed, it is carefully controlled.*

3

BACKGROUND

A. Wildlife Management: Legislative Requirements

Managing wildlife is a provincial responsibility under the Constitution Act (1867). However, the Migratory Birds Treaty (1916) gives the federal government responsibility for protecting migratory birds. Consequently, jurisdiction over waterfowl and most songbirds within th province is shared by the federal and provincial governments. Marine mammals in non-tidal waters are managed by the federal government. When they come inshore, though, marine mammals are handled co-operatively with the province. Most other large mammals and birds are now protected under the British Columbia Wildlife Act and regulations.

Amphibians, most reptiles and mammals are in provincial jurisdiction, under the Wildlife Act. Exceptions are marine mammals and sea turtles, which fall under the jurisdiction of both the federal and provincial governments.

Wildlife is the property of the crown in right of the province, whether it is on private or public land. The health of wild animal populations depends greatly on maintaining sufficient types and amounts of habitats. But wildlife management agencies across North America are hampered by their lack of direct control over most land and water that support wildlife. That is certainly true for the Wildlife Program: even though it is responsible for protecting and managing our wildlife resources, it has little control over the land base upon which wildlife depend.

Much of the province's land is either controlled by other government agencies (92 percent) or privately owned (7.5 percent). Even on the best habitat where the land has been assigned to the Wildlife Program (less than 1 percent), prior resource commitment — such as timber or range — impedes wildlife habitat management. Therefore, a major component of B.C. Environment's strategy is its participation in co-operative planning processes with other government agencies and private developers.

Where important habitats on Crown land require special protection or enhancement, the Wildlife Program may request management authority from other ministries. On privately owned lands, the development rights of the owner are established in law. Municipal or regional district zoning may offer some habitat

preservation, as can owners in co-operation with government. But where absolute protection is required the most reliable options are leasing or buying the land.

Wildlife Management Areas may be established under the authority of the Wildlife Act, on high-value Crown land habitats over which the Wildlife Program has gained administrative control, or on private lands which have been leased or purchased. In those areas, wildlife conservation is the first priority.

B. Wildlife Management Responsibilities in B.C. Environment

B.C. Environment has three programs that relate to the protection and management of wildlife, fisheries and their habitat: Wildlife, Fisheries and Integrated Management. In addition, the Conservation Officer Service is charged with enforcing the Wildlife Act and nine other pieces of environmental legislation.

This is the structure of the Wildlife Program, based on published figures for 1990:

- 131 staff members, in total, are located across British Columbia.
- The director and a headquarters staff (58) at the Wildlife Branch in Victoria provide policy direction, provincial co-ordination, specialized technical advice and staff services.
- Regional managers (six) direct the activities of various biological and technical staff in wildlife, fisheries and habitat management sections.
- Biological and technical staff (67) are in 10 centres around B.C., where most operational wildlife management activities occur (figure 2).

Wildlife Program staff are required to meet a series of legal and regulatory functions which are obligated by legislation (table 1). Those functions are: setting regulations, administering licence and permit systems, collecting revenues, holding hearings and dealing with appeals, ensuring public safety through the control of "problem" animals and, in general, protecting and enhancing wildlife and habitat.

The Wildlife and Fisheries Programs have a joint interest in the management of fisheries resources. Many of the fish species are prey to birds and mammals, just as amphibian larvae are preyed upon by fish. Besides being the main habitat for fish, streams, lakes, wetlands and riparian habitats are also used by many wildlife species.

The Integrated Management Program provides the lead for habitat protection, interagency referrals, and policy development on interagency habitat management. It therefore forms a vital link with the Fisheries and Wildlife Programs in the management of those resources. The Conservation Officer Service has 128 conservation officers in 50 regional and district offices throughout the province.

Figure 2

Administrative Regions of B.C. Environment

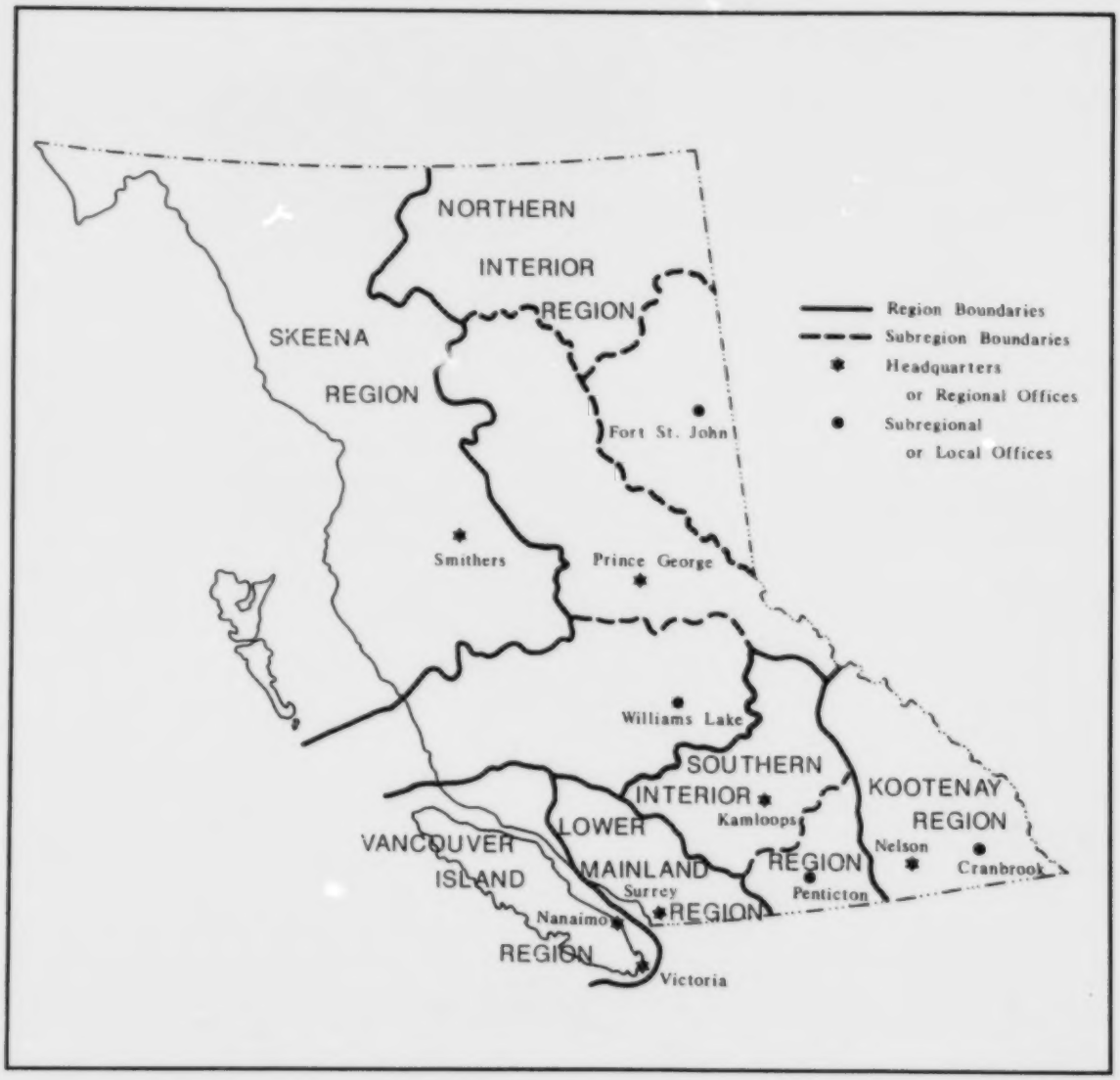


Table 1

Activities Undertaken by the Wildlife Program to Meet Regulatory Obligations

Regulations

Setting regulations and orders.
Negotiating and setting guide quotas.
Posting signs and notices.
Administering CITES.
Administering migratory bird regulations.

Licences and Permits

Issuing licences and permits (possession, exports, imports, compulsory inspections).
Cancelling licences (wildlife).
Exempting licence requirements.
Administering Limited Entry Hunting (lottery).
Administering CORE (prescribed training for licences).
Administering guide licences and certificates.
Administering trapping licences and registered traplines.

Habitat Protection and Enhancement

Disposition of Crown property.
Habitat protection referrals required by agreements.
Administering Habitat Conservation Fund (fish and wildlife).

Revenues

Collecting revenues for Habitat Conservation Fund.
Collecting royalties (fur, guide).
Collecting licences and permit fees.

Hearings and Appeals

Conducting guide hearings (disposal areas).
Mediating trapline disputes.
Licence cancellations and appeals.

Public Safety

Providing animal control.

C. Sources of Program Funding and Revenues

Funding — Wildlife Program funding averages about $12.5 million dollars per year and comes from three major sources:

1. The main budget is approved by the Legislative Assembly. About $9 million is allocated for the program provincially. Of that, about 62 percent is spent on staff salaries, 10 percent on services received from other B.C. Environment branches (such as computing services), and 13 percent on new initiatives such as wildlife viewing. Just 15 percent remains for the actual operations of the Wildlife Program.

2. The Habitat Conservation Fund (HCF) gets most of its revenue from surcharges on angling, hunting, guide and trapping licences. Approximately $2.5 million is received per year and is spent on specific projects to enhance fish and wildlife populations or habitats. Initiated in the early 1980s, the HCF was designed to permit enhancement work over and above the basic wildlife management and protection activities covered by regular budgets.

3. The Wildlife Program receives additional funding from provincial and federal government agencies, nongovernmental organizations, industry, and public groups, on a project-specific basis. The annual funding from such sources is variable and cannot be predicted. Examples include:

   - Monies from the Sustainable Environment Fund for activities such as habitat acquisition and resolution of elk/agriculture conflicts in the Kootenays.

   - Co-operative funding for habitat acquisition with organizations like Wildlife Habitat Canada and the Nature Trust of British Columbia.

   - Contributions to property maintenance by Ducks Unlimited (Canada).

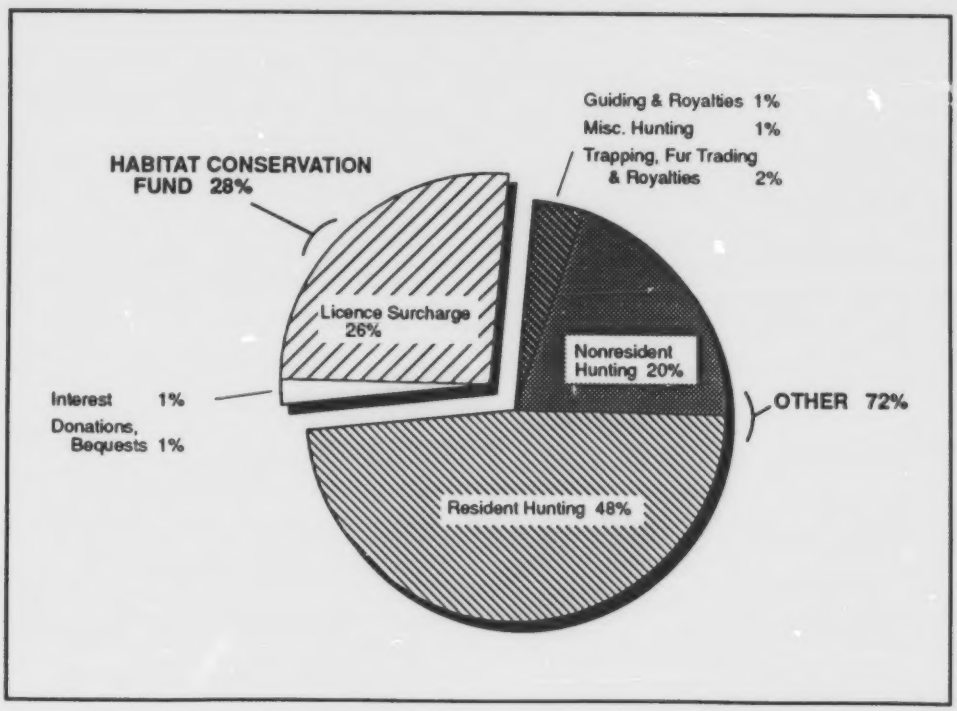
   - Co-operative funding for research with the Ministry of Forests.

   Some monies also are received in compensation for damage to wildlife populations and habitats caused by major development projects. Over $1 million comes annually from the B.C. Hydro and Power Authority, the Ministry of Transportation and Highways, and other government agencies — to pay for losses incurred by such projects as highway and dam construction.

Revenues — Revenues collected under the Wildlife Act from hunting licence sales and royalties total approximately $7.8 million per year — representing 80 percent of the main Wildlife Program budget. With the exception of money donated and bequeathed to the Habitat Conservation Fund, almost all of the total wildlife revenues are generated by consumptive wildlife users (figure 3). At present, no money is collected directly from nonconsumptive wildlife users.

Figure 3

Revenues Collected under the Wildlife Act



D. Current Uses and Values of Wildlife

British Columbia's wildlife resource supports many uses and produces many benefits: recreational, scientific, subsistence, cultural and commercial. Each year, over a million people take part in recreational and commercial uses of our wildlife. In terms of the time devoted to different wildlife-related activities in our province, the annual total is over 100 million days (table 2).

A 1983 provincial survey showed that over 87 percent of British Columbia residents are interested in wildlife; 75 percent are involved in wildlife-associated activities in or near their homes; and 94 percent feel that wildlife is an important aspect of their trips.[1]

The early 1980s saw a decline in the number of hunters in B.C., followed by a levelling-off in the mid- and late 1980s. The decline was part of a general trend across North America and stemmed from many causes:

- Urban expansion and the accompanying creation of "no hunting and shooting" areas, which have reduced hunting opportunities.
- A more affluent society together with the proliferation of leisure industries, which have created many other ways for people to spend their time and money.
- A fear of gun-associated crime.
- A population which is aging beyond the years when hunting is most popular.
- The need to travel farther to hunt, coupled with higher travel costs.
- An urban media bias against hunting.
- The activities of anti-hunting groups.

There are significant exceptions to the general downturn in hunting, though. Big-game hunting has remained relatively stable. In the Kootenays, big-game hunting has risen substantially in recent years, as has mountain sheep hunting in the North. Those trends reflect successful wildlife management programs that have produced high success rates and rewarding hunting experiences.

The commercial use of wildlife is also growing. For many years, the farming of upland game birds and the ranching of some furbearers have been well developed. The government recently sanctioned game farming of bison, fallow deer and reindeer, and it transferred the administration of game farming to the Ministry of Agriculture, Fisheries and Food.

Table 2

Estimated Annual Participation in Wildlife-Related Activities in B.C.[5]

*Wildlife-Related Activities**	*Number of Participants*	*Number of Days*
Residential	1,498,000	N/A
Direct Use (Nonhunting)	473,000	8,563,000
Indirect Use (Nonhunting)	1,299,000	107,325,000
Hunting — Licensed Resident	128,000**	1,400,000
Hunting — Licensed Nonresident***	6,000	40,000
Trapping	2,200	N/A

* Figures for Direct Use and Indirect Use based on 1983 information. Figures for Hunting and Trapping based on the 1989/90 season.

** 128,000 to 174,000 hunters were licensed annually over the past 10 years. Over 250,000 are registered as qualified hunters.

*** Nearly all nonresident hunters employ one of 263 licensed guides.

Big-game guiding, geared mainly to nonresident hunters, has long been an important economic activity in rural B.C., especially in the North. The industry is growing rapidly. Guides are expanding their services to include more residents, and to provide viewing and photographic safaris in the nonhunting season.

Trapping is a traditional activity in the province, especially in rural and northern communities and for Native people. Today, it is still an important use of a valuable renewable resource. In 1987–88, raw fur sales amounted to $5.2 million.[2] A significant proportion of British Columbians also enjoy wildlife in more sedentary ways: through books and magazines, films and television, lectures and wildlife art.

Residents and visitors spend substantial sums of money on wildlife-associated activities — for transportation, food, accommodation, equipment, guide fees, traplines, and preparing and shipping fur pelts. Such spending occurs in all parts of B.C., making a vital contribution to many rural economies.

Direct expenditures by recreational and commercial wildlife users have ripple effects that support further activity throughout the provincial economy. Retailers selling directly to sportsmen hire employees, and purchase goods and services to satisfy their customers. That stimulates business and employment in other sectors which indirectly supply sportsmen. The equivalent of over 12,000 person-years of employment for provincial residents is generated by such direct and indirect expenditures linked to wildlife use (table 3).

In some isolated rural communities, wildlife-related activities may provide the only source of employment and income for many local residents. Guiding and trapping offer meaningful work and may prevent a dependence on welfare.

Residents have indicated a willingness to pay significantly more money for wildlife-related recreation than they do now. According to a recent survey, if a daily fee were to be charged — as it is for skiing — British Columbians would be prepared to spend up to $400 million a year, over and above the present costs.[3] The total economic value of wildlife-linked activities in B.C. is more than $1 billion each year (table 3).

Besides its recreational and commercial uses, wildlife benefits British Columbians by its very presence — whether or not we encounter animals in the field. It is part of our heritage, making our lives more rich. British Columbians want to preserve that heritage for future generations, and value the fact that the wildlife resource is there, now, to experience and enjoy. Indeed, B.C. residents have said that such values are so important that they would be willing to spend over $131 million annually to preserve the present variety and abundance of wildlife.[4]

In summary, it is evident that our wildlife heritage is highly valued and extensively used, by residents and nonresidents alike. Wildlife not only enhances the everyday life of most residents, but is a key contributor to the economic health of the provincial economy.

Table 3

Estimated Value of Wildlife-Related Activities in B.C.[6]

Activities	*Expenditures*	*Net Economic Value*	*Gross Economic Value**	*Employment* (years of work)
Residential	$50,833,000		$50,833,000	
Direct Use (Nonhunting)	505,775,000	$134,848,000	640,623,000	10,153
Indirect Use (Nonhunting)	54,518,000	104,314,000	158,832,000	
Hunting — Residents	125,022,000	61,906,000	186,928,000	1,376
Hunting — Nonresidents	19,277,000		19,277,000	566
Trapping	9,289,000		9,289,000	84
Preservation Value		131,751,000	131,751,000	
TOTAL	$764,714,000	$432,819,000	**$1,197,533,000**	12,179

Table 3 is based on 1985 information; 1989 dollar equivalent

* Gross Economic Value = Expenditures + Net Economic Value

E. Present Status of Wildlife Species and Habitat

If we are to wisely manage wildlife for a healthy future, we need to know the status of each species so that we can determine which need protection, especially with respect to ***endangered*** or ***threatened*** species. However, very little information exists on the biology, ecology and habitat of most of the province's 630 species.

Based on the information that is available, the Wildlife Program has categorized the condition of wildlife species in B.C. by assessing six criteria (a more detailed explanation of the criteria is found in appendix 2):

1. Abundance
2. Distribution
3. Habitat integrity
4. Population trend
5. Reproductive potential
6. National and international status

Wildlife Species — The information gained by that categorization process has led to the creation of the *Wildlife Species Evaluation List* (see appendix 2). The evaluation list is divided into two sections: ***Species at Risk*** and ***Species Not at Risk***. Those sections, in turn, each have two subsections. The result is four "sublists" identified by colours (red, blue, yellow and green):

Species at Risk
- Endangered and/or threatened species — Red List
- Sensitive and/or vulnerable species — Blue List

Species Not at Risk
- Management emphasis — Yellow List
- No management emphasis — Green List

Endangered/threatened species are defined as those with low abundance. They are legally designated as either ***threatened*** or ***endangered*** — or are being considered for such status — because of the danger of extirpation or extinction. ***Endangered*** species are any indigenous (native) species threatened with imminent extinction or extirpation throughout all or a significant portion of their range in B.C.. ***Threatened*** species are any indigenous species that are likely to become endangered in B.C. if factors affecting their vulnerability are not reversed. Recovery plans are being written that outline strategies for regaining viable populations within the province.

Sensitive/vulnerable species are any indigenous species that are not ***threatened*** but are particularly at risk. Population viability is a concern, as indicated by significant current or predicted downward trends in population numbers or density, and/or habitat suitability (which would further reduce existing distribution). Populations are included here that are generally suspected of being vulnerable, but for which information is too limited to allow designation in another category.

Management emphasis species are managed to meet particular public demands. They include most game and furbearing species.

No management emphasis species do not receive special management efforts, due to low public demand or interest. They are managed only by the application of broad habitat management guidelines. Like all other species, their status will be periodically reviewed.

Habitat — The fate of wildlife habitat in our province is not something we can determine with certainty since it is affected by all the other uses of the forest, land and water. However, land use practices are producing some general trends:

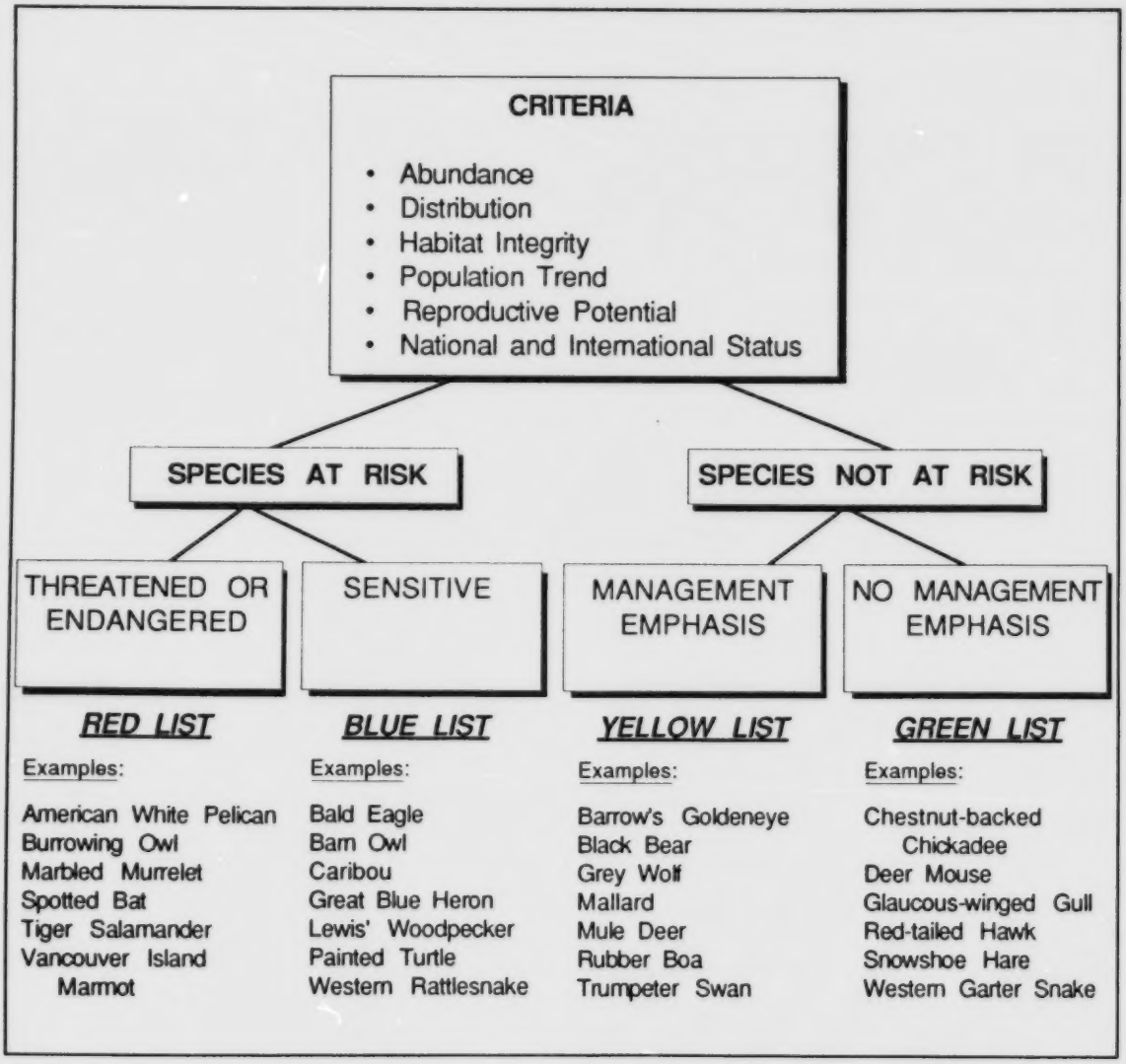
- Current forestry methods will result in ecological simplification.
- Intensive silviculture — including herbicide spraying and fire suppression — are reducing early successional habitats, which are rich in shrubs and herbaceous plants.
- Forest harvesting is rapidly destroying old-growth forests.
- Wetland and shoreline habitats are being lost to activities such as agriculture, logging, and urban and hydroelectric development.

A number of habitats are of major concern. Some are rare in the province; others are susceptible to major impacts from human activities such as urban expansion and timber harvesting. Some habitats support a high level of species use relative to their availability, or provide a critical need in the habitat requirements of one or more species. (Prognoses for wildlife habitats of concern are in appendix 3.)

Research — The majority of management issues requiring research arise from resource interactions or from the use of wildlife by people. The most powerful factors affecting the sustained well-being of wildlife populations are the land use activities of other government agencies and the private sector. Accordingly, the Wildlife Program becomes involved in interagency research projects funded and administered co-operatively by combinations of government, university, public conservation and industrial organizations. Not only does that approach facilitate research; it also fosters communication among different agencies, and between researchers and managers.

Figure 4

Categorization of Wildlife Species



4

MEETING THE CHALLENGES OF WILDLIFE MANAGEMENT

The proposed wildlife strategy rests on the fact that wildlife plays a key role in sustaining ecological integrity. Indeed, as the caged canary served to warn early miners of unhealthy conditions, wildlife populations presage ecological instability, or stability, for the modern world. Thus, the Wildlife Program's strategic goal — ***to manage the province's wildlife resources . . . by maintaining an optimal balance between ecological, cultural, economic and recreational needs*** — forms a firm foundation for ensuring sound ecosystems and pursuing sustainable development in our province. The obligation to be wise, responsible stewards is also reflected in Goal One of the Wildlife Program.

If we are to preserve viable populations of all native species, it is essential that we maintain adequate wildlife habitat. Significant damage to wildlife and habitats can be caused by agriculture, forestry, mining, domestic grazing, urban and industrial development, transportation corridors, hydroelectric dams and reservoirs.

Some wildlife species, such as the white-tailed deer, moose and Rocky Mountain elk, respond favourably to some disturbed forest habitats. Some, such as the raccoon and Canada goose, can even adapt so well to urban environments that they become a nuisance. However, species such as the caribou, pileated woodpecker, marten, and spotted owl, which require old-growth forests, are rapidly running out of places to live due to forest harvesting and intensive silviculture. Species such as the grizzly bear and wolf, which require minimal disturbance and maximum space, are seriously endangered by expanding human development.

It is relatively easy to sustain species that are not disrupted by close contact with human activity. The hard work lies in trying to maintain the diversity of all wildlife species, particularly those whose habitat requirements are incompatible with modern development. That is becoming more and more difficult as resource development intensifies and extends into increasingly remote areas. Therefore, the proposed wildlife strategy defines *Challenge One* as ***managing wildlife for diversity and sustainability.***

Once ecological needs have been satisfied, it is sometimes possible to manage wildlife populations in response to public demand. But conflicting views on

appropriate wildlife use have imposed difficult choices on wildlife managers. Public demands range from consumptive uses such as hunting, trapping and guiding, to appreciative uses such as viewing and photographing, all the way to the other end of the spectrum, which advocates no use at all.

Satisfying all interests in all cases is not possible. In issues that have become highly polarized — such as ones involving trappers and hunters, on one side, and animal rights lobbyists, on the other — holding a reasonable and fruitful dialogue on managing wildlife is difficult. Hence, wildlife managers must develop a broader range of opportunities, also providing better education and rationalization of existing programs. ***Challenge Two — managing wildlife for public demands —*** stems from that reality and is linked to Goals Two, Three, and Four. ***Challenge Two*** is discussed in terms of the four major uses of wildlife: ***appreciative use, hunting, guiding and trapping.***

The prevention and control of wildlife damage has always been an important part of a wildlife manager's job, which is reflected in Goal Five. ***Challenge Three*** flows out of that goal, and is ***managing wildlife for the protection of human safety and property.***

Wildlife management programs should be effectively marketed in order to heighten the recreational opportunities they support and to respond to growing public interest in wildlife issues. The Wildlife Program must be able to better inform the public about the many wildlife activities of its managers and the facts of controversial issues. Accordingly, ***Challenge Four*** is ***educating and informing the public*** about the wildlife resource and its management.

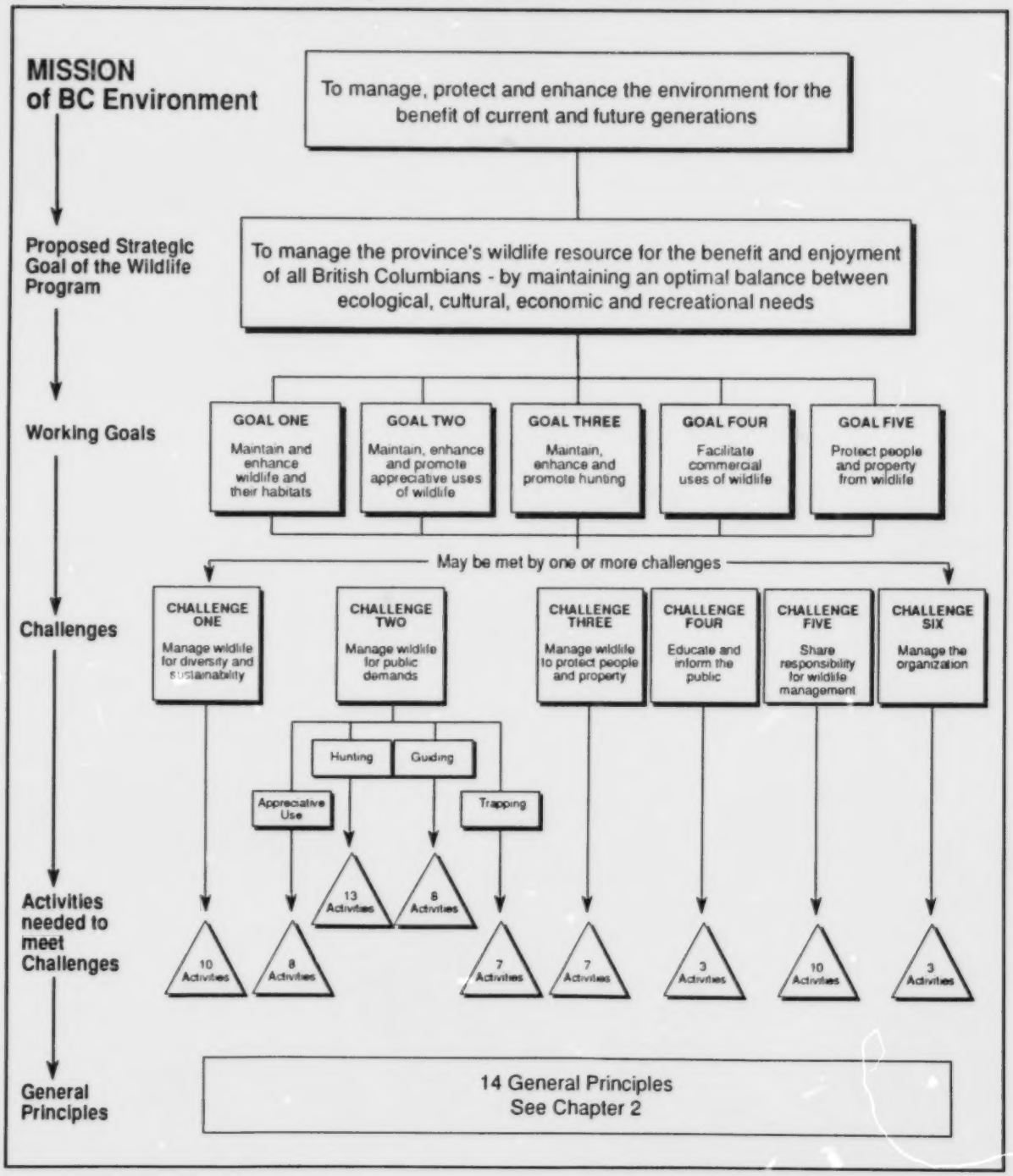
The Wildlife Program also needs to find fresh ways of thinking about and achieving its responsibilities. The key is to ensure that, where new approaches are tested or where management responsibilities are delegated, the program maintains enough authority to ensure proper stewardship of wildlife. The proposed wildlife strategy therefore includes ***Challenge Five — sharing responsibility for wildlife management.***

Effectively addressing the five goals and their associated challenges requires an efficient organization. ***Managing the organization*** is the focus of ***Challenge Six.***

The final chapters will discuss those six challenges in greater detail and describe the activities required to carry them out. To ease understanding, figure 5 summarizes the mission, goals, challenges, activities and principles of B.C. Environment and the Wildlife Program.

Figure 5

The Wildlife Program: Summary of New Goals and Activities


MISSION of BC Environment
To manage, protect and enhance the environment for the benefit of current and future generations
Proposed Strategic Goal of the Wildlife Program
To manage the province's wildlife resource for the benefit and enjoyment of all British Columbians - by maintaining an optimal balance between ecological, cultural, economic and recreational needs
Working Goals
GOAL ONE
Maintain and enhance wildlife and their habitats
GOAL TWO
Maintain, enhance and promote appreciative uses of wildlife
GOAL THREE
Maintain, enhance and promote hunting
GOAL FOUR
Facilitate commercial uses of wildlife
GOAL FIVE
Protect people and property from wildlife
May be met by one or more challenges
Challenges
CHALLENGE ONE
Manage wildlife for diversity and sustainability
CHALLENGE TWO
Manage wildlife for public demands
CHALLENGE THREE
Manage wildlife to protect people and property
CHALLENGE FOUR
Educate and inform the public
CHALLENGE FIVE
Share responsibility for wildlife management
CHALLENGE SIX
Manage the organization
Hunting
Guiding
Appreciative Use
Trapping
Activities needed to meet Challenges
10 Activities
8 Activities
13 Activities
8 Activities
7 Activities
7 Activities
3 Activities
10 Activities
3 Activities
General Principles
14 General Principles
See Chapter 2

5

CHALLENGE ONE:

MANAGING WILDLIFE FOR DIVERSITY AND SUSTAINABILITY

Managing wildlife for diversity and sustainability involves all wildlife species and their habitats. Hence, most of the recommended activities in this chapter apply to all species and habitats. Not every species, however, is given equal management emphasis, because of differences in their biology, distribution and abundance. Some activities deal only with species and habitats at risk (Red and Blue Lists), as they require the most effort to ensure their continued diversity and viability.

ACTIVITIES

✓ ***Develop legislation. Three new legislative requirements are needed for the Wildlife Program to meet the challenge of diversity and sustainability:***

1. ***Establish legal protection for important wildlife habitat.***
   The only wildlife habitat formally protected under the Wildlife Act is within the eleven Wildlife Management Areas that have been established to date. We need more comprehensive legislation to protect the habitat that is essential to maintaining wildlife populations.

2. ***Legally protect rare plant species.***
   British Columbia's great diversity of native plants includes as many as 816 rare species, with 57 in immediate danger of permanent loss. Three species are believed to have been extirpated in recent years. At present, native plants are safeguarded mainly through land reservations under the Ecological Reserves Act and indirectly through the Park Act. Land cannot easily be set aside for every threatened plant species. But since only seven of the plant species of management concern in British Columbia grow in forested areas, the potential for conflict in preserving most of the management concern species will probably be slight. Legislation to protect rare plant species is being drafted.

3. *Give legal protection to rare invertebrate species (spiders, insects, snails, etc.).*
   No provincial legislation exists in this area. The ministry is considering forming a group of experts to identify rare invertebrate species and develop appropriate legislation to preserve such species.

✔ ***Conduct species, habitat and population inventories.***
Species and habitat inventories provide critical information for wildlife management. Population inventory is carried out to estimate animal numbers, distribution and status.

Within its regional ecosystem classification, the Wildlife Program maps areas of special importance to habitat management in greater detail — using soils, vegetation and wildlife data (biophysical mapping). The mapping enables wildlife managers to accurately engage in habitat enhancement and to priorize areas for habitat protection and species management.

✔ ***Evaluate species and habitats.***
As discussed in chapter 3, the Wildlife Program recently evaluated the health of wildlife species in the province, using as criteria their abundance, distribution, habitat integrity, reproductive potential, population trend, and national and international status. Since habitat is essential to species viability, determining and assigning priority to habitats most likely at risk is a necessary step in maintaining diversity and sustainability. Both species and habitat evaluations will be conducted periodically.

✔ ***Provide input on land and water use practices.***
Wildlife species and habitats are safeguarded mainly by providing management recommendations to logging, mining, agricultural and other resource uses, with the assumption that such recommendations will sufficiently protect habitat. That approach to habitat protection is accomplished largely through integrated planning mechanisms — including interagency referrals on land and water use applications, access management planning, and forest Timber Supply Area and Tree Farm Licence plans. Input is also provided on environmental impact assessments.

✔ ***Obtain strong control of habitat.***
Habitat may be secured through rigorous laws under other agencies' mandates, as in the case of provincial parks (Ministry of Lands and Parks) and Provincial Forest Wilderness Areas (Ministry of Forests). If important habitats on Crown land need special protection, other ministries can assign management authority to B.C. Environment.

The situation with private land is different, since the owner legally owns the development rights. Municipal or regional district zoning can create some

habitat protection, but B.C. Environment can assure good protection by leasing or buying the land. At the same time, though, we should develop an incentive for private owners to maintain and restore habitat on private land.

The sizes and types of geographical areas required to maintain habitat for different species will vary. Most small mammals, larger herbivorous mammals, birds, reptiles and amphibians could be sustained by securing relatively small, critical habitat areas — such as winter ranges, nesting sites, denning sites and individual wildlife trees. That might be achieved by creating small Crown land reserves administered by the Wildlife Program or by purchasing key habitats.

Large carnivores, some raptors and other animals may need very large areas. Their needs may be met through parks or Provincial Forest Wilderness Areas. Securing necessary habitat for species that require pristine or undisturbed surroundings will be more difficult. In some cases, co-operative management with adjacent provinces, territories and states is necessary.

✔ ***Manage wildlife species and habitats at risk.***
We need to adopt specific management approaches to individual species defined as threatened/endangered or sensitive/vulnerable (outlined in the *Wildlife Species Evaluation List* in appendix 2). Management approaches required for habitats under serious stress are indicated in the list entitled *Wildlife Habitats of Major Concern* (appendix 3). In light of the significant impacts on wildlife habitats — from forestry, mining, agriculture and human settlements — there is an increasingly urgent need to restore degraded habitats and to sustain habitats that are healthy.

A main thrust of the Wildlife Program, aided by the money provided by the Habitat Conservation Fund, is habitat enhancement. The type of enhancement applied relates to species' requirements, such as additional food production or nesting sites. Habitat enhancement can be accomplished through prescribed fire, pruning, planting, livestock control, fertilizing, thinning and spacing of trees, impoundment of water, and many other techniques. The Wildlife Program often has the opportunity to manipulate habitats by being involved in land and water use decisions, which can lead to better conditions than existed in the habitat's "natural" state.

✔ ***Meet national and international ecological obligations.***
The issues and pressures confronting the wildlife resource extend beyond administrative and legal boundaries. Its fate depends on the actions of many different peoples and governments — and must be a shared concern.

The Wildlife Program cannot operate in a vacuum, isolated from what is happening to wildlife in adjacent jurisdictions and around the world. We have an obligation to co-operate with provincial, state, national and

international government agencies in protecting and regulating wildlife populations. That is especially true where international regulation of trade is needed to safeguard sensitive populations from overexploitation, or where assistance is required to re-establish wildlife species into historic habitats.

Meeting its international ecological obligations requires that the Wildlife Program continue to be involved in formal initiatives such as:

1. The Convention on the International Trade in Endangered Species of wild flora and fauna (CITES), which regulates the sale and trade in threatened and endangered species.

2. The recovery of endangered wildlife.

3. The Canada/British Columbia Wildlife Agreement.

4. The North American Waterfowl Plan (Pacific Coast Joint Venture).

5. The Federal/Provincial Wildlife Conference.

Other co-operative initiatives with neighbouring jurisdictions are aimed at improving the management of transboundary populations. For example, British Columbia is continuing its work with the Interagency Grizzly Bear Committee (U.S.A.), which is helping to recover grizzly populations in the neighbouring ecosystems of Montana, Idaho and Washington. As well, the B.C. and Yukon governments are engaged in a joint venture to survey and regulate the use of populations of gyrfalcons common to both jurisdictions.

✔ ***Improve the access to data on species and habitats at risk — for resource managers and the public.***

A computerized system for data storage and retrieval is being implemented in the province under the Conservation Data Centre, a joint undertaking by B.C. Environment and nongovernmental partners. Such an information system, now present in all American states, is to be used in British Columbia for two important habitat management purposes:

- Multiagency planning processes, to ensure that proposed resource developments do not endanger rare elements (wildlife species, habitat, plant species).

- Proactive internal planning, to adequately protect rare elements through land acquisition, administrative control or strong legislation.

6

CHALLENGE TWO:

MANAGING WILDLIFE FOR PUBLIC DEMANDS

Besides working to ensure diversity and sustainability, wildlife management in B.C. strives to accommodate a variety of public uses, requirements and demands. The species which the Wildlife Program oversees to meet most public demands fall mainly in the "management emphasis" category (appendix 2 — Yellow List). However, the management needs of a particular species are not determined solely by how the public uses it.

Government-approved goals for wildlife management must be seriously considered when decisions are made on resource use and development. Following public input on this discussion paper and the creation of the Wildlife Strategy, the next step in the planning process will be to analyze the numerical population objectives defined in regional wildlife plans and provincial species statements. The analysis will be carried out in light of public comment, and the availability and condition of habitat. Where needed, objectives for key wildlife species will be revised and submitted to the government for approval.

We will discuss the work that should be carried out to meet ***Challenge Two*** under four topics, relating to different interests:

- *Managing Wildlife for Appreciative Uses*
- *Managing Wildlife for Hunting*
- *Managing Wildlife for the Guiding Industry*
- *Managing Wildlife for the Trapping Industry*

It should be noted that a number of activities discussed in ***Challenge One*** but also needed for ***Challenge Two*** have not been repeated here. Those include the broad functions of species and habitat management (such as wildlife and habitat inventory, research and enhancement) and the enrichment of wildlife populations (through such techniques as transplants, selective harvesting and predator control).

A. Managing Wildlife for Appreciative Uses

The citizens of British Columbia have called on the government to expand the opportunities for the appreciative use of wildlife. That request is initially being met by the Wildlife Viewing Program, a $1.7 million co-operative venture carried out by the Ministries of Environment; Lands and Parks; and Development, Trade and Tourism. The Wildlife Viewing Program's direction is achieved through an advisory committee with public, industry and agency representation. Its main goals are:

- To provide leadership in fostering the appreciative use of wildlife, and in emphasizing wildlife's role as an indicator of a healthy, well-managed environment.
- To create opportunities for enriching the public's knowledge and awareness of wildlife and their habitats. The Wildlife Viewing Program does that by providing informational/interpretive materials, and by establishing or identifying wildlife viewing areas.
- To promote the growth of tourism and the economic benefits from wildlife viewing while protecting environmental values (particularly from any harm to wildlife and habitat capability).

The Wildlife Viewing Program will be implemented, and the appreciative uses of wildlife promoted, through the following activities:

ACTIVITIES

✔ ***Prepare a problem analysis of the need for regulations associated with appreciative uses.***
The analysis should lead to new regulations, including possible licensing for the use of sensitive species and habitats, or for other means of generating revenues to support appreciative use.

✔ ***Update the 1983 survey on appreciative use by B.C. residents and nonresidents.***

✔ ***Enhance habitats for species that lend themselves to appreciative use.***

✔ ***Ensure that regulations are properly enforced. The public and wildlife groups will be encouraged to participate.***

✔ ***Implement a public education project on the appreciative use of wildlife.***

- ✔ ***Develop and promote viewing areas throughout the province.*** This activity should include a major promotion and marketing effort that will acquaint both residents and tourists with the opportunities to watch wildlife.

- ✔ ***Enhance the industry that is based on the appreciative use of wildlife.*** This can be accomplished by setting up travelling workshops for the adventure tourism industry and by liaising with the Ministry of Development, Trade and Tourism in a marketing campaign.

- ✔ ***Monitor the effects of wildlife viewing on species at various sites, before and after the project development.***

B. Managing Wildlife for Hunting

Hunting is a legitimate use of the province's wildlife. Where the enduring vitality of an animal population is not threatened, B.C. Environment will promote ethical and humane hunting. That includes subsistence hunting by Native people on unoccupied Crown land as directed by recent court decisions. Providing the opportunities for hunting will continue to be a key role of the Wildlife Program, reflecting Goal Three.

B.C. Environment considers hunting to be a valuable outdoor experience that promotes an appreciation for, and an understanding of, natural environments. Where hunting opportunities can be provided, the emphasis will be on the quality of the outdoor experience, rather than on the harvest.

Types of Hunting Seasons — In British Columbia there are two main types of hunting seasons: General Open Seasons and Limited Entry Hunting. General Open Seasons provide equal opportunity for anyone with a valid hunting licence and the appropriate species licences. Restrictions are placed on hunting methods and the length of season, and on the sex and age of animals to be hunted. There is no restriction on the number of hunters, nor on where hunting can take place in a Wildlife Management Unit — except for limits imposed by safety considerations, such as a nearby highway.

Limited Entry Hunting imposes the same restrictions used in General Open Seasons, but it also restricts each permit area to a set number of hunters. The number of eligible authorizations is predetermined by Wildlife Program staff. Limited Entry Hunting provides equal opportunity for anyone with a valid hunter number to submit his name for entry in any of the available "draw hunts" in the province.

Limited Entry Hunting allows hunters to go after game of limited supply which would otherwise have to be closed in General Open Season Hunting. Limited Entry Hunting also leads to better hunter distribution and better selection of animals of specific age and sex. On the other hand, General Open Seasons provide the hunter with opportunistic hunting, less planning and a greater choice of hunting areas.

The activities below focus on managing hunting and improving its opportunities:

ACTIVITIES

- ✔ ***Carry out activities required to meet regulatory obligations (see table 1).***

- ✔ ***Give the Director of the Wildlife Branch, and the courts, the power to suspend and cancel hunting licences.***

- ✔ ***Establish a regular review of licence fees.***

- ✔ ***Conduct inventories of species and habitat to aid planning and management.*** The integration of population and habitat inventories will be promoted, as will the participation of industry in inventory activities.

- ✔ ***Continue to monitor hunting use through annual surveys of hunters.***

- ✔ ***Recommend enforcement priorities.***
  Abuse of the Wildlife Act and regulations has always been a serious concern. Enforcement is the responsibility of the Conservation Officer Service. Wildlife Program staff must liaise with conservation officers to discuss enforcement priorities and appropriate actions.

- ✔ ***Develop regional plans that identify the population levels of wildlife species in different administrative and ecological subdivisions of the province.***
  To accomplish this activity, there must be more emphasis on acquiring the information needed to assess population and habitat objectives.

- ✔ ***Encourage wildlife interest groups to work together — to strengthen the public's support of wildlife management and to give the public a more active role in resource referrals.***

- ✔ ***Continue to attain management control of key wildlife habitat, and to encourage wildlife interest groups and members of the public to acquire habitat.***

✔ ***Evaluate area specific predator control for enhancing wildlife populations.***
The control of predators (such as wolves, cougars and bears) to enrich other wildlife populations continues to be a very contentious aspect of the Wildlife Program. Much public opposition has arisen from efforts during the early 1980s to increase ungulate stocks in the northeast by controlling wolves. Objections range from opposition to the idea of killing predators so that hunters and other people will benefit, to the moral stance of animal rights groups.

However, as the province continues to be developed, we are losing valuable habitat that once sheltered and sustained wildlife. If we are to work towards the Wildlife Program's objectives, we will have to produce more animals on a reduced land base, whether the ultimate goal is to hunt the species, view it or ensure its survival. Consequently, we may have to lower competition and predation from other wildlife to increase the levels of the desired species.

Predator control for wildlife management purposes will be permitted only where be it can be shown either that the prey population has decreased to the extent that it is at risk, or that the management objectives for the prey species can no longer be met. Reliable data must substantiate that there is a clear, causal relationship between numbers of prey and predator. Any proposal will be reviewed by a technical review board consisting of outside experts and public representatives. Reviews of each approved program will be undertaken periodically. Where possible, the management objectives will be met through trapping or shooting in regular seasons.

The Wildlife Program will also conduct habitat enhancement for game species (see appendix 3). Regional and provincial priorities for enhancement will be developed, and the Habitat Enhancement Monitoring Guidelines[1] will be implemented.

✔ ***Expand the involvement of environmental groups and the private sector in enforcement — through such initiatives as Wilderness Watch.***
As poaching can, in some instances, have drastic effects on local wildlife populations, the Wildlife Program is working on getting better estimates of poaching losses in each region.

In some jurisdictions, the potential for illegal trafficking in wildlife parts is definitely increasing, but its present extent in B.C. is unknown. However, there is no doubt that the demand for live raptorial birds and the body parts of game animals — such as gall bladders, antlers, heads and hides — is on the rise. The program will investigate the possible illegal trade in wildlife organs and tissues.

The Wildlife Program will only allow the collection of live raptors when regular surveys determine there are enough wild birds to permit a limited

harvest. Furthermore, a conservation officer must be present during the season to closely control harvesting.

Seasons will be set in association with those of neighbouring jurisdictions, especially the Yukon, to ensure that both resident and migratory bird populations are protected. The Wildlife Program takes the position that such a collection is a legitimate use of wildlife as long as it does not harm the productivity of the wild populations. In fact, such captures can create a reserve of birds for reintroduction into the wild, if a natural catastrophe should occur.

✔ ***Develop provincial research priorities, based on the regional wildlife plans and provincial species statements. Potential projects include:***

- Developing population inventory techniques for game species.
- Evaluating selective harvest management techniques.
- Investigating predator control methods.
- Investigating the impacts of forestry on game species.

✔ ***Encourage safe and satisfying participation in hunting by:***

- Making available to prospective hunters the Conservation and Outdoor Recreation Education Program (CORE), to encourage safe participation in hunting.
- Simplifying the hunting regulations and, where possible, liberalizing bag limits and seasons if such activities are consistent with species management objectives.
- Placing more emphasis on providing for different kinds of hunting possibilities.
- Promoting ethical and humane hunting through, for example, brochures and advertisements.

C. Managing Wildlife for the Guiding Industry

British Columbia is internationally renowned for its rich wildlife and wilderness resources, which are the cornerstone of a successful guiding industry. Licensed guides[2] provide services such as big-game hunting, wildlife viewing, trail rides, fishing, and photographic safaris to both resident and nonresident clients. The guides and their clients constitute a significant component of the province's

tourism industry, contributing approximately $25 million in revenue to the provincial economy.

The present system of guide licensing is very effective. It was initiated in 1948, but has continually improved to aid resource conservation and the needs of the industry. Guides are governed under the Wildlife Act and are certified for a 10-year period, renewable every five years, for the exclusive privilege of guiding within a prescribed area. (Residents are free to use guide areas but they may not guide other hunters.)

The Wildlife Program determines quotas for particular species that may be hunted by nonresidents, through an allocation policy. In the case of a limited harvest, resident hunters have first priority. The allocation policy allows for discussions involving the guides, resident hunters and wildlife biologists. The quotas are reviewed and set annually, based on the numbers of animals available for harvest.

Over the years, guides have been instrumental in securing and maintaining many of the wilderness areas in British Columbia. Their role in wildlife and habitat management has grown, with many guides providing essential services such as inventory and enhancement within their guiding areas. Also on the rise is the general demand for guides — for high-quality hunting and other wilderness experiences.

The process for managing wildlife for the guiding industry will include the following activities:

ACTIVITIES

✔ ***Carry out these initiatives to improve management of the guiding industry (beyond the statutory requirements listed in table 1):***

- Review needs for licences and regulations regarding appreciative-use guiding.
- Monitor the sale of wildlife parts.
- Carry out a regular review of guide licence fees.

✔ ***Develop provincial population and habitat inventory strategies to direct priorities.***
The Wildlife Program will promote the integration of population and habitat inventories (consistent with those carried out by B.C. Environment) along with the guiding industry's participation in inventory activities.

✔ ***Complete pilot business development plans for licensed guides by 1992 — to enable them to operate more effectively and to play a greater role in resource and land use decisions.***

- ✔ ***Continue to encourage small guiding businesses to enhance their territories on a cost-sharing basis, through the Guide Outfitter Wildlife Enhancement Fund.***

- ✔ ***Explore ways to link Guide Declaration forms, CITES forms and Compulsory Inspection forms, in order to expedite data collection.***

- ✔ ***Consider carrying out wildlife research projects, such as the following:***
  - Examining the taxonomy of game species.
  - Encouraging the guiding industry to contribute to provincial research priorities.
  - Helping to establish a co-operatively funded research foundation.

- ✔ ***Run workshops for guides, to improve their marketing skills. The Wildlife Program will also promote more guide involvement in appreciative wildlife uses.***

- ✔ ***Conduct guide surveys to determine the levels of guided appreciative use and hunting (for both residents and nonresidents), and to establish their value as revenue and tourism generators in the province.***

D. Managing Wildlife for the Trapping Industry

Probably no other component of the Wildlife Program is as controversial as the trapping industry. Supporters of the industry hold the view that it is a legitimate use of the wildlife resource, with a long historic tie to the traditional lifestyle of many Native bands. Critics, on the other hand, portray it as a brutal hold over from the last century that has outlived its relevance to modern British Columbia. In the debate about the industry, it is difficult to separate the facts from the emotion and controversy.

The Wildlife Program takes the view that trapping is an ecologically sound activity that is governed by wildlife management principles. Besides being a traditional use of wildlife, trapping provides annual income to thousands of British Columbia trappers, most of whom live in remote areas. The province's leadership in developing and implementing humane trapping methods will continue to be a cornerstone of its trapping program.

The management strategy for furbearing animals province-wide is meant to promote a humane, biologically sound harvest with a minimum of regulatory control. The Registered Trapline (RTL) system — developed in B.C. and used

extensively by other jurisdictions — permits the development of a management regime that places a high measure of responsibility on the trapper.

Management strategies have been identified for three classes of furbearers:

Class 1 Species — These are present on RTLs in manageable numbers (beaver, fox, marten, mink, muskrat, raccoon, skunk, squirrel, weasel). Trappers will be provided with the best information available to develop harvest strategies for Class 1 species. The program will monitor the species in this group that are known to be vulnerable to overharvesting, such as martens..

Class 2 Species — These are not present in manageable numbers on RTLs and are vulnerable to overharvesting (lynx, bobcat, wolverine, fisher and otter). Regional wildlife staff will take the lead in overseeing Class 2 species, in consultation with local trappers' associations.

Class 3 Species — These are not present on RTLs in manageable numbers and do not appear to be vulnerable to overharvesting (wolf, coyote). Historically, trapping has not been an important factor in regulating the numbers of wolves and coyotes. Class 3 species may cause conflicts, especially in agricultural areas. As well, wolves and coyotes may limit or reduce numbers of other wildlife species. The Wildlife Program will focus on training trappers to successfully trap Class 3 species. It will also encourage trapping in conflict areas.

The activities below identify how wildlife will be managed for trapping and how opportunities to trap will be facilitated:

ACTIVITIES

✔ ***Consider the following initiatives to upgrade wildlife management with regard to trapping (in addition to the statutory requirements listed in table 1):***

- Amend the Humane Trapping Regulations as more humane systems become available.
- Review existing seasons to ensure maximum flexibility for trappers.
- Institute compulsory inspection for species of management concern, such as fishers and bobcats.
- Establish minimum and maximum quotas.

✔ ***Consider these proposed inventory activities:***

- Provide trappers with a method for making an inventory of Class 1 furbearers.

- Provide regional staff with a method for making an inventory of Class 2 furbearers.

- Develop and implement a trapper questionnaire to track population and habitat trends within ecoprovinces (appendix 1).

✔ ***Develop habitat management guidelines for the trapping industry — to maintain and enhance furbearing populations, and to help trappers participate in resource referrals.***

✔ ***Provide trappers with recommendations on how to enrich furbearing populations and habitats.***

✔ ***Make recommendations to the Conservation Officer Service to ensure compliance with the Humane Trapping Regulations.***

✔ ***Conduct research in these areas:***

- Feasibility work on habitat capability classification as a method of population inventory.

- Population and ecological research on fishers and other furbearers of management concern.

✔ ***Expand trapper education to benefit both trappers and furbearing wildlife.*** An education program for trappers is in place, sponsored by both the B.C. Trappers Association and the Wildlife Program. It will remain a condition for obtaining a trapper's licence. A program for licensed trappers is being developed and will soon become a condition for maintaining such licences. As well, renewed efforts will be focused at training Native trappers.

The Wildlife Program will work with the B.C. Trappers Association in educating children on the role of trapping. The program will also develop public information brochures to supplement the trapping displays now in circulation.

7

CHALLENGE THREE:

MANAGING WILDLIFE TO PROTECT HUMAN SAFETY AND PROPERTY

As human settlements and activities intrude more and more on wildlife's traditional domain, the conflicts between people and wild animals will intensify. We must protect people and property without needlessly sacrificing wildlife.

There are two options for minimizing the dangers to human safety posed by "problem" carnivores. The first is to help towns, municipalities and Crown land operations carry out ongoing and long-term planning. The second is the short-term handling of specific troublesome animals. For example, where it is considered ecologically feasible and cost-effective, the Wildlife Program will try to relocate grizzly bears and cougars. In most cases, black bears will be humanely killed, unless conditions suggest that a relocation would be successful. On the other hand, most smaller, less mobile species — such as the western rattlesnake, raccoon and otter — will be moved to a suitable habitat.

Property damage can be caused by deer in orchards, elk in alfalfa fields, otters in fish farms, and geese in corn fields. Wolves, bears and cougar kill livestock, and coyotes and raccoons kill household pets. Society demands that those problems be alleviated. The Wildlife Program takes the view that private landowners and farmers are responsible for good husbandry. Although the program assists private landowners in protecting livestock and domestic crops, it does so only if complaints have been validated and landowners have taken reasonable steps to handle the situation themselves.

Wildlife damage to regenerating forests is now serious in some areas of British Columbia. As silvicultural activities increase, in response to accelerated demands for forest products, there will be more damage. Effective control measures will be necessary.

ACTIVITIES

✔ ***Protect people from problem carnivores.***

In many areas of the province, conflicts occur between humans and carnivore species such as bears and cougars. Where problems occur, the primary consideration is given to human safety, followed by the welfare of the animal. The response of the Wildlife Program to those problems is conditioned by a number of factors, both ecological and economic:

- In the case of animals such as bears, information from across North America indicates that the good habitat is probably already occupied by bears. Hence, placing a problem bear in such areas will frequently lead to fights over territory and, possibly, the death of one animal. Similarly, translocation of black bears into grizzly areas will frequently result in the grizzly killing the black.

- Unless animals are removed extreme distances, the probability of their returning to the capture site is extremely high.

- The cost of relocation is prohibitive. Spending money on what may not be a feasible solution will lead to cutbacks in other significant parts of the Wildlife Program.

✔ ***Reduce conflicts between agriculture and wildlife.***

Such friction encompasses two major issues: agricultural damage caused by wildlife and the control of predators in livestock areas.

1. ***Reduce agricultural damage caused by wildlife.***

   Conflicts between agriculture and wildlife are often severe in British Columbia because of topographical and climatic limitations, and the pattern of human settlement. The best agricultural land is also the most productive wildlife habitat; indeed, it often is critical habitat for many species. In some areas — such as the East Kootenay Trench, the Okanagan, the Thompson and Fraser Basins, and the Peace Lowlands — agricultural activities attract wildlife to the extent that conflicts arise. That is particularly the case in cultivated fields and some orchards.

   The Wildlife Program's policy is that landowners/lessees are responsible for protecting their property from wildlife — through the selection of appropriate crops and harvesting methods, and the use of such deterrents as noise makers, fences and repellants. Where the discharge of firearms is not a public safety issue, special hunting seasons have been set up to help property owners reduce the numbers of troublesome wildlife. The government has also issued permits allowing valid commercial enterprises to kill individual animals.

In addition, provincial and regional "problem wildlife advisory committees" have been effective in addressing many outstanding issues. Those committees include representatives of B.C. Environment, the Ministry of Agriculture, Fisheries and Food, the B.C. Federation of Agriculture, the B.C. Federation of Naturalists, the B.C. Wildlife Federation and the B.C. Cattlemen's Association.

Necessary actions to reduce conflicts include:

- Developing guidelines for farmers that will minimize conflicts with wildlife.
- Enhancing wildlife habitats to provide foraging alternatives — away from agricultural crops.
- Recommending to the government a detailed cost-benefit analysis of crop damage versus crop protection options.
- Opposing new agricultural development on Crown land where conflicts with wildlife will occur.
- Emphasizing the need for interagency referrals on land and water use applications, access management planning, forest Timber Supply Area and Tree Farm Licence plans. Input is also provided, and important, for environmental impact assessments.
- Ensuring that wildlife are transplanted, in response to an approved integrated resource management plan, if a substantial impact on agriculture is anticipated.

2. ***Control predators in livestock areas.***
In many rural areas, the predation on all classes of livestock — by wolves, coyotes, bears and, to a lesser extent, cougars — is a continuing problem. B.C. Environment's position is that the onus is on the rancher to practise good animal husbandry in order to safeguard livestock. The ministry also tries to discourage livestock operations in areas where predator populations are known to be high.

   If livestock losses occur, B.C. Environment policy is that the complainant must first show that his husbandry practices have not contributed to the predator problem. In addition, there must be evidence of actual predation on livestock or harassment of livestock before any remedial action will be taken. Predators are not killed simply because they are frequenting a ranching area.

   Where those conditions are met, the Conservation Officer Service attempts to remove the disruptive animal, either by shooting or trapping.

If that is not possible, a poison called Compound 1080 (sodium monofluoroacetate) is used in limited amounts under federal and provincial licensing provisions, and only to destroy wolves and coyotes.

A total of 6.5 grams of Compound 1080 — or approximately a quarter of an ounce — is allotted for use each year in British Columbia, with the conditions for its application strictly controlled. Restrictions are placed on the dosage and number of baits, and the disposal of baits not taken. Every attempt is made to reduce the threat to nontarget species such as crows and furbearers.

The ministry is exploring nonlethal methods of control, such as the use of livestock guardian dogs and birth control technology. Such research will be emphasized even more in future.

✔ ***Reduce the risk of vehicle collisions with wildlife along public roads, rail lines and airports.***
The collision of vehicles with wildlife can injure or even kill people, and cause costly damage to vehicles (average costs are $1,800 per deer collision and $3,000 per moose collision). In addition, wildlife are killed and populations reduced.

A number of methods have been used to lower the chance of collisions, including fences, warning reflectors, signs and underpasses. On major new highway projects, the construction design takes into account the highway's potential impact on wildlife. As a consequence, exclusion fencing is often built for both public safety and wildlife conservation. However, such design is lacking on existing roads and highways.

The use of warning reflectors will continue to be recommended because it is an inexpensive and effective method. The Wildlife Program encourages rail corporations and the Ministry of Transportation and Highways to annually report collisions and wildlife fatalities.

✔ ***Reduce waterfowl and gull conflicts in areas of high-density public use.***
In the last 20 years, waterfowl and gulls have adapted very well to urban conditions, at times posing a nuisance. In fact, public use of high-density recreational areas, such as beaches and golf courses, is being partially displaced by waterfowl. Human health is becoming a concern as fecal materials are contaminating both land and water. Some water bodies and beaches have been temporarily closed until cleansed by rain and wind.

The Wildlife Program will identify areas that have had large numbers of gulls or waterfowl for some time. It will then rank the troublesome areas in terms of health concerns identified jointly by the Ministry of Health and local governments.

The most effective and socially acceptable control of gulls and geese is consistent and rigorous harassment as soon as they turn up on the site. The harassment can be done by a trained dog or more commonly by the use of "cracker shells." Follow-up options that can be considered for controlling waterfowl include removing or destroying the eggs, transplanting goslings, instituting special hunting seasons and killing mature birds.

✔ ***Reduce conflicts with wildlife in urban/residential areas.***
The Wildlife Program will continue to respond to questions and complaints from urban dwellers about problem or nuisance wildlife. It is ministry policy to dispatch specially trained staff to capture and, if necessary, kill large carnivores (such as bears and cougars) and large ungulates (such as moose and elk) in urban/residential areas where they threaten human safety. The decision on whether to capture or kill an animal is left to the discretion of the officer at the site.

The ministry does not remove small animals that may be a nuisance, however. Such activities are the responsibility of local citizens and governments, often through pest control companies.

The Wildlife Program will continue to advise municipal governments and individuals on preserving habitat for desirable species and discouraging less desirable ones. Similarly, it will continue to encourage homeowners to minimize conflicts with wildlife by keeping garbage out of reach and by controlling household pets. Staff of the Wildlife Program will continue trying to dissuade municipal governments from alienating prime wildlife habitat for subdivision or industrial development.

✔ ***Inform the public about safety concerns associated with eating wild meat.***
Human consumption of wild meat is expected to increase, especially as meat from game farms enter the market. The public has expressed interest in the nutritional value of game meat, and concern about illness related to endemic parasites and other diseases. Public information and education are required to address those questions.

8

CHALLENGE FOUR:

EDUCATING AND INFORMING THE PUBLIC

Wildlife is a public resource, but public knowledge of its basic biology and management requirements varies widely. Few city dwellers fully appreciate the impact that industrial activities and urbanization are having on wildlife habitats and populations. When people turn on lights and taps, or build houses, they seldom consider the valley that was flooded or the forest that was harvested to produce those amenities, nor the resulting loss of productive wildlife habitat.

Much of what is left of the natural environment must be vigorously managed to maintain significant parts of the province's native fauna and to compensate, in part, for the pervasive presence of humans. As industrial and urban activities continue to degrade the natural world, as subdivisions chase wildlife up mountain slopes and as agriculture creates homogeneous habitat, the need for strong wildlife management intensifies.

People need to better understand natural processes and develop a stewardship ethic with respect to the environment and the renewable resources it supports. Education is the answer in this case.

ACTIVITIES

✔ ***Augment the environmental education programs.***
The Wildlife Program supports two educational programs. The first one, the Conservation and Outdoor Recreation Education Program (CORE), focuses on conservation education. It aims at setting a high standard for firearms safety before a person will be permitted to obtain a hunting licence in the province. CORE also attempts to instill in the first-time hunter an appreciation and respect for wildlife, and an ethical approach towards harvesting game animals.

The program will continue to emphasize the compulsory examination, while the actual course instruction is optional for those who feel they can learn the necessary material on their own. CORE is part of a strategy to attract more people to hunting and to make the sport more accessible to the public.

Attempts are being made to have the course more fully reintroduced into the school curriculum.

The second program, Project WILD (introduced in 1987), helps children in all levels understand basic ecological principles, and the impact of human actions on wildlife and the environment. Already, close to 2,000 teachers — representing almost half of B.C.'s school districts — have taken a Project WILD workshop and are introducing Project WILD to their colleagues and their classrooms. The Wildlife Program will continue to support Project WILD. It will also explore the possibility of expanding the project outside the school system: for example, to clubs like 4-H, the Girl Guides and the Boy Scouts.

Education officers should be assigned to each administrative region. In addition to providing support to the two existing wildlife education programs, they could act as a liaison with the education system — with both formal educators in schools and universities, and informal educators such as youth organization leaders.

✔ ***Expand the public information program.***
Wildlife Program staff often take part in lectures, panels and workshops to provide information on wildlife and habitat management. However, such participation alone is not enough to respond to the many unpredictable pressures on the Wildlife Program. For instance, during the hunting season, biological staff in the Vancouver area spend most of their time answering telephone inquiries about hunting regulations and opportunities for the entire province. Many of those inquiries could be handled more efficiently by dedicating certain staff to the task or by providing better information to cover the questions asked most frequently.

The information program should be expanded by establishing information officers in each administrative region, by distributing brochures on species and habitat, and by setting up mall and school displays. That should be part of an overall ministry plan to get its message across to the public — and thereby head off much of the controversy created by a lack of information or by misinformation.

✔ ***Conduct public opinion surveys.***
The Wildlife Program recognizes that the public should be regularly surveyed to ensure that the program's direction reflects the public's wishes. Besides monitoring public demands for wildlife, the program conducts surveys to determine current levels of wildlife use. Specific survey requirements for different types of wildlife use are identified under the appropriate challenge.

9

CHALLENGE FIVE:

SHARING RESPONSIBILITY FOR WILDLIFE MANAGEMENT

The 1990s hold a major challenge: we must find innovative ways to share management responsibility for British Columbia's wildlife. Fiscal restraint in government and the public's call for more involvement in wildlife issues have created the challenge. Native groups, private landowners, forest companies and local wildlife organizations have all expressed an interest in taking part in wildlife management. Therefore, wildlife managers are investigating new, consultative patterns of management, emphasizing the importance of private sector participation.

Much expertise exists outside government that could be used to advantage. Moreover, since wildlife management has a great potential for public controversy and debate, a major aspect of any management program should be public acceptance, or at least an understanding, of the process and its consequences. The Wildlife Program can accomplish that by consulting the public on wildlife management decisions.

ACTIVITIES

✔ ***Fulfil commitments on lands administered by the Wildlife Program.***
The Nature Trust of British Columbia, Wildlife Habitat Canada, and Ducks Unlimited (Canada) are acquiring lands for wildlife and often hand over the management responsibility to the Wildlife Program. In addition, the program may purchase land or have administration transferred to it. Although some acquired lands are suitable for wildlife in their current condition, others may require work to make them best able to support animals or recreational use.

Once lands are secured, or in some cases before they are secured, management plans are developed which outline objectives and proposed activities. The management schemes identified in the plans are implemented through such mechanisms as the Habitat Conservation Fund. At present, our ability to support those management schemes is very restricted.

✔ ***Encourage private landowners to manage habitat on their properties.***
Many private lands are critical to wildlife survival. The Wildlife Program concentrates its efforts on Crown land and is only minimally involved with habitat or population management on private land. However, there are sympathetic landowners who would, with incentives, be willing to allow the Wildlife Program to carry out habitat enhancement — and perhaps help out themselves — if they had information on how to do so. Such information would include written materials demonstrating how habitat preservation and enhancement could be compatible with private land management and agricultural activity.

✔ ***Provide greater opportunity for Native people to participate in wildlife management.***
For the Native people of the province, hunting, fishing, trapping and gathering are traditional uses of fish and wildlife. And for many of them wildlife are an integral part of their food supply and have a special cultural significance. In the past, the Wildlife Program did not recognize the special nature of Native requirements.

The Wildlife Act applies equally to non-Native and Native people, except that the latter do not require a hunting or trapping licence. The lack of a requirement for licensing and the subsequent lack of information on Native hunting have made it difficult for government to properly manage game animals — especially in areas around Indian reserves.

The Wildlife Program will explore with individual bands the development of co-operative management agreements, aimed at a greater sharing of the management responsibility in areas where Native use of wildlife is a significant factor. Such agreements may include co-operative inventory and research studies, the involvement of Native people in enforcement, and ongoing liaison with wildlife staff on matters of management and enforcement.

It is hoped that co-operative agreements will result in both better wildlife management and a greater chance for Native people to share fully in using the wildlife resource.

✔ ***Investigate granting private forest companies more responsibility for protecting and managing wildlife on lands under their control.***
No other resource industry has a greater effect on wildlife habitat and populations than does the forest industry. The interaction of the industry with wildlife managers has been more or less successful over the past 10 years. But the need for Wildlife Program staff to be given a more active role in harvesting decisions grows more urgent as forestry becomes increasingly intensive. Recent policy decisions by the Ministry of Forests have delegated

more and more responsibility for forest management directly to the larger companies.

On the other hand, there are some benefits to be gained by making the private companies more responsible for protecting and managing wildlife resources on lands under their control. The Wildlife Program will explore ways to delegate responsibility for inventory, habitat protection and enhancement to forestry companies — to complement similar delegation in the management of timber resources.

For such a departure from the traditional management of wildlife to be successful, forestry companies would have to be held accountable for maintaining or achieving a certain objective for wildlife in a particular area, with penalties for failure. Guidelines could be provided outlining the expectation of the Wildlife Program and prescriptions for proper wildlife management. The role of the wildlife manager would be more of an auditor than an actual on-site manager. The public naturally would insist that the level of management and protection remain as high as with government management. Public access to the use of the wildlife resource would also have to be sustained and regulated.

✔ ***Promote more recreational opportunities on private land.***
Much of the province's wildlife is managed on Crown land. In some parts of the province, such as the Lower Mainland, the land is mostly private; possibilities for wildlife recreation are limited due to restricted access and municipal regulations. That is unfortunate, since such areas also have the greatest concentrations of people, and wildlife opportunities are available to them only if they travel far afield. The Wildlife Program can do more to meet the demand for wildlife on private land.

The program will investigate opportunities for private landowners to develop hunting and viewing opportunities, which may include charging for access to the resource. The Wildlife Program does not mean to imply that such a concept would be appropriate all across the province, nor is it attempting to introduce the European style of wildlife management. However, the initiative would provide wildlife-related recreation where none now exists and would give urban dwellers greater exposure to wildlife. It would also stimulate local investment in wildlife as a viable small business.

✔ ***Increase the involvement of public groups in managing land for wildlife.***
British Columbia has a very large number of organizations primarily interested in wildlife. Those groups form a reservoir of knowledgeable, dedicated people who should be playing a larger direct role in wildlife management. That is especially true for those areas which have very high wildlife values. Such areas may be controlled by the Wildlife Program or

designated as Wildlife Management Areas. To date, areas controlled by the Wildlife Program have suffered from a lack of active management because other demands have kept staff from investing the necessary time and effort.

The program intends to increase the involvement of private wildlife groups in managing and enhancing such areas. Possibly, an organization or a local club could "adopt" a wildlife area, and be delegated some responsibility for its stewardship. Plans for enhancement and protection could be developed by the club or by consultants, and then approved by the Wildlife Program. Proposals to the Habitat Conservation Fund or the Public Conservation Assistance Fund could be the vehicle for funding enhancement projects. To maintain interest and continuity, incentives may be needed.

✔ ***Improve the involvement of the public in major management issues and activities.***

The Wildlife Program recognizes that some of its activities spark public controversy. Experience has indicated that elements of such debate may be defused by better public education and involvement in decision making. Although the program makes the ultimate management decision, an informed public can play a greater role in shaping the program's direction.

Public input on management decisions is obtained through advisory boards and authorities (such as the Habitat Conservation Fund Advisory Board and the Creston Valley Wildlife Management Authority) and through special advisory groups (such as provincial and regional Problem Wildlife Advisory Committees). Where appropriate, more use will be made of such forums to advise the Wildlife Program on the technical and social aspects of proposed activities (such as the Kootenay Hunting Opportunities Committee).

✔ ***Formalize the commitment to wildlife management by rehabilitation groups.***

Traditionally, the Wildlife Program has given minimal support to the work of private rehabilitation organizations in treating sick, injured and orphaned animals. In so doing, the program has emphasized that it perceives its role as maintaining the health of ecosystems, habitat and populations, rather than that of individual wildlife. However, modern society still expects that there be some capability to provide shelter and veterinary aid to such animals.

In reality, the Wildlife Program brings many of the injured animals to private facilities. If we are to continue to use those facilities we should be prepared, to some degree, to support their upkeep. We at the Wildlife Program will establish standards and criteria which, if met, could make rehabilitation organizations eligible for a small amount of government support. Those standards would, of necessity, be somewhat restrictive — to prevent the unregulated growth of such organizations. But there is definitely a need for an adequate number of professional and well-regulated facilities across B.C..

✔ ***Encourage local governments to assume more responsibility for managing wildlife and habitat on lands under their jurisdiction.***
Municipalities and regional districts make decisions daily that affect wildlife species and habitats on lands under their jurisdiction. Formal agreements should be prepared identifying prescriptions for protecting and enhancing species and habitats on those lands — for example, preserving eagle trees, preserving wetlands in parks and controlling goose populations. Information packages on species and habitats should be provided to local governments.

✔ ***Develop an organized program for volunteer involvement in wildlife management.***
The Wildlife Program intends to promote more use of volunteers in management, especially with respect to habitat enhancement. That will be accomplished mainly by expanding the opportunity for co-operative projects through the Public Conservation Assistance Fund.

The fund supports about 40 projects, each year, for both fish and wildlife. The criteria for approval are that the public must match the government contribution, and that half of the public contribution can be made in the form of volunteer labour. The program will try to increase the monies available in the Public Conservation Assistance Fund so more projects can be completed.

The possibility of developing a "Wildlife Volunteers" program — similar to those employed by the Royal British Columbia Museum and the Ecological Reserves Program — will be explored. Much more could be done in data analysis, inventory and literature review through the use of casual volunteers, both in regional offices and in Victoria. To encourage continued interest, incentives such as crests and awards could be given out.

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CHALLENGE SIX:

MANAGING THE ORGANIZATION

We can maintain an effective Wildlife Program only if its personnel, fiscal and administrative framework is solidly grounded. We must ensure that staff are well-trained, motivated and able to respond constructively to new challenges. They must also have up-to-date knowledge about advances and new discoveries in wildlife management in other jurisdictions.

ACTIVITIES

✓ ***Adopt a relevant and flexible corporate structure.***
Few government programs are experiencing as rapid, diverse changes in public attitudes and demands as is the Wildlife Program. The program must be able to respond quickly to those requests. Hence, its organizational structure must be evaluated at regular intervals to make sure the structure emphasizes the elements of management and protection that the public thinks are important.

✓ ***Maintain an active planning and evaluation component.***
The Wildlife Program must regularly assess its priorities and directions. After all, the program has to deal with 630 wildlife species, innumerable habitats, scores of possible impacts, new resource developments, changing public demands and apparently limitless pressures on its staff. The program needs a planning section that directs its activities in a dynamic and proactive manner. Site-specific plans will continue to be executed where needed.

In terms of the formalized planning process which the Wildlife Program will carry out, the wildlife strategy will act as an umbrella document to the following other planning products:

1. Regional wildlife plans
2. Provincial species statements
3. Land management strategy

Regional wildlife plans will identify species and habitat management activities over a five-year period, for each of the 10 administrative areas in the province. They are intended primarily for internal use by wildlife and habitat managers at the regional and provincial levels. However, they will also aid communication with other agencies and the public. Information contained in the regional wildlife plans is reflected in both this discussion paper and provincial species statements.

Provincial species statements are being prepared to inform the public about the proposed management of 32 individual wildlife species or species groups. Where possible, the statements will set population objectives for each species in the different ecological areas of the province. The Wildlife Program will seek provincial government sanction of those objectives.

The provincial species statements will also define major strategies for managing habitat and species use. If needed, a document will be prepared that will summarize the information in the provincial species statements and give direction in defining priority activities among species and geographic areas of the province.

The final planning product is a province-wide ***land management strategy***. The strategy will seek to protect and enhance wildlife by providing priorities for acquiring private land, obtaining administrative control of Crown land and influencing decisions on land and water use.

In addition to the wildlife planning documents, B.C. Environment will prepare papers describing wildlife values in British Columbia, trends in hunter use and wildlife viewing opportunities. Such papers will provide more detailed information than can be contained in the plans.

Table 4

Wildlife Program Planning Activities and their Lifespan

Document	*Purpose*	*Distribution*	*Updating*
Provincial Wildlife Strategy	To identify, for public review and comment, a strategy for managing the wildlife resource.	Wide public distribution.	Every 10 years.
Provincial Species Statements	To inform the public about the proposed management of individual wildlife species or species groups.	Public distribution.	Every 10 years.
Regional Wildlife Plans	To guide species and habitat management activities in B.C.'s administrative regions.	Limited to selected industries, government and nongovernment agencies.	At least every 10 years.
Land Management Strategy	To set priorities for acquiring private land or administrative control of Crown land, in order to manage wildlife. Also, to provide a basis for influencing land and water use decisions in favour of wildlife.	Public distribution.	Every 10 years.

✔ ***Maintain a professional and motivated staff.***
The strength of the Wildlife Program will continue to be the commitment and professional competence of its staff. With changing demands and the need to rationalize often conflicting pressures — not only from different wildlife uses, but also other resource sectors — staff training and professional development must be a high priority. Over the next ten years, training must emphasize:

1. Balancing competing demands.
2. Public involvement in the Wildlife Program.
3. Conflict resolution.
4. Negotiation skills.
5. Technical proficiency.

We need to maintain a high technical ability in all our staff and keep pace with technological advances in wildlife management and related sciences. To do that, we will stress provincial workshops and training sessions. Computer-assisted training should be used much more often, in order to expose as many employees as possible to new methods and techniques.

The Wildlife Program will attempt to foster information exchanges and expose staff to new challenges by encouraging and facilitating exchanges between other agencies, regions and Victoria, on a temporary basis. As well, incentives must be developed to reward employees who raise the profile of the program and the wildlife resource.

CONCLUSION

Managing Wildlife to 2001 outlines the major initiatives that the Wildlife Program considers essential to managing B.C.'s wildlife. In some areas, the document formalizes and strengthens activities already underway. In others, it is leading to new approaches and actions.

This discussion paper proposes clear directions for preserving and enriching wildlife and habitat. It will be used to clarify the roles of the staff and the various sections in the Wildlife Program, in their work to ensure a healthy resource.

Specifically, *Managing Wildlife to 2001* provides the basis for developing species management, regional and operational plans. Another important task will be determining how successful the Wildlife Program is in attaining each goal and challenge in the document. The results of such monitoring and evaluation will demonstrate what the Wildlife Program is accomplishing, where more work is needed, and where staffing and finances should be targeted.

A key aspect of this proposed wildlife strategy is its emphasis on consultation and teamwork — within government, as well as with the public and the main stakeholders in the resource. This paper is meant to help people understand the direction the Wildlife Program is taking, and to encourage input on program policies and activities.

After considering the comments on *Managing Wildlife to 2001* (in the fall of 1991), the Wildlife Program will create the new Provincial Wildlife Strategy. The strategy will be followed for ten years, after which it will again be reviewed and revised. While holding fast to the goals of the Provincial Wildlife Strategy during this decade, the Wildlife Program will be responsive to changes in management requirements, and to new public demands and priorities.

We in the Wildlife Program are committed to sustaining abundant and thriving wildlife for all British Columbians, now and in the future. The new wildlife strategy will seek to accomplish that crucial task, while reflecting the concerns which people throughout B.C. have about wildlife management. Your comments are therefore important to us and we will consider them most carefully.

APPENDIX 1

ECOREGIONS OF BRITISH COLUMBIA

The ecoregion classification[1] has been developed to provide a systematic view of the ecological relationships of the province. That classification offers a framework for interpreting the complex interrelationships between landforms and climate.

Creating a hierarchical system allows us to better understand an area in its local, regional, provincial, continental and global context. For example, *ecodomains* and *ecodivisions* are very broad in scale and put British Columbia in the global perspective. *Ecoprovinces, ecoregions* and *ecosections,* on the other hand, are progressively more detailed and narrow in scope.

Our mountainous province also has another level of complexity: that of topo-climatic zonation. Within each terrestrial ecoregion are climatic zones, reflected by the plant and animal communities that are present. Those zones are best dealt with through the B.C. Ministry of Forests' biogeoclimatic classification.[2]

The ecoregion classification gives recreationists and the general public a greater understanding of the province's environment and defines the areas which contain unique "made-in-B.C." ecosystems.

Wildlife managers use the ecoregion classification to comprehend the overall distribution of wildlife in British Columbia. Such knowledge is essential because many of the species they manage make annual, elevational or transglobal migrations. Wilderness advocates use the classification to identify unique ecosystems and to place wilderness proposals in a provincial or global framework.

The following map represents the ecoprovince level of the ecoregion classification. The ecoprovinces are used to define provincial-level ecosystems. They are also used to record the abundance and distribution of wildlife species on the Red, Blue and Yellow Lists (appendix 2), as well as the various important habitats in our province.

Sources of information on the other ecosystem classification levels are indicated in the notes (1 and 2) for this appendix.

Figure A1

Ecoprovinces of British Columbia

APPENDIX 2

WILDLIFE SPECIES EVALUATION LIST

The Wildlife Species Evaluation List describes the status and prognosis of the wildlife species in B.C.. It also outlines the management activities needed to maintain or enhance each species, for the ecoprovinces in which they occur. The Wildlife Program has used the following criteria to evaluate species health:

1. Abundance — number of individuals breeding in British Columbia.
2. Distribution — based on ecological subdivisions of the province.
3. Habitat integrity — applies to all environmental threats that may affect a species over the next 10 years; based on habitat currently occupied.
4. Population trend — considered for the population in British Columbia over a period of at least three generations, or three life cycles.
5. Reproductive potential — average number of young per female, over the life of the female.
6. National and international status — assessed at the species level. Based on the percentage of the population that occurs in British Columbia and the species' relative abundance outside the province.

Table A1 demonstrates the ranking process, based on the above criteria.

The Wildlife Species Evaluation List is the title for four "sublists" that have been made by placing together species of similar status and prognosis. The lists, identified by colour, are grouped in two sections: ***Species at Risk*** and ***Species Not at Risk***:

Species at Risk
- Red List — Endangered and/or threatened species.
- Blue List — Sensitive and/or vulnerable species.

Species Not at Risk
- Yellow List — Management emphasis.
- Green List — No management emphasis.

The Green List has not been included in this document because species on that list are neither considered to be at risk, nor are of special management interest. (The Green-List species also include many introduced species which are agricultural pests, such as the Norway rat and European starling.)

Table A1 — Criteria and Ranking System Used to Determine the Status of Wildlife Species in B.C.

CRITERIA	RANK				
	12	9	6	3	0
1. Abundance	***Very Low***	***Low***	***Limited***	***Moderate***	***Common***
Number of individuals breeding in B.C.	≤ 100 (e.g. Burrowing Owl, Spotted Bat)	≤ 500 (e.g. Vancouver Island Marmot, White Pelican)	≤1000 (e.g. Badger)	≤ 5000 (e.g. Cougar, California Bighorn)	> 5000 (e.g. Mallard, Mountain Goat)
2. Distribution Based on ecological subdivisions of B.C..	***Very Restricted*** 1 ecoregion. (e.g. Townsend Mole, Sea Otter)	***Restricted*** 1 ecoprovince or 2 ecoregions. (e.g. Gyrfalcon, Rattlesnake)	***Localized*** 2 ecoprovinces or 4 ecoregions. (e.g. Western Grebe, Mountain Beaver)	***General — Localized*** Narrow niches, clustered distribution. (e.g. Eared Grebe)	***Widespread*** Broad ecosystem distribution. (e.g. Snowshoe Hare, Ruffed Grouse)
3. Habitat Integrity Confined to habitat now occupied. Includes all environmental threats.	***Severely Threatened*** > 50% of habitat liable to be destroyed in 10 years. (e.g. Marbled Murrelet)	***Threatened*** >10% of habitat liable to be destroyed in 10 years. (e.g. Ancient Murrelet)	***Deteriorating*** Major long-term degradation/ alienation. (e.g. Grizzly Bear, Bald Eagle)	***At Risk*** Degradation likely within 10 years. (e.g. Fisher)	***Not At Risk*** Habitat changes not likely to affect populations. (e.g. Mule Deer, Ruffed Grouse)

CRITERIA	RANK				
	12	9	6	3	0
4. Population Trend In B.C. over a period of at least 3 cycles or 3 generations.	***Below Minimum Viable Population*** (e.g. Burrowing Owl, Whitetailed Jackrabbit)	***Rapidly Decreasing*** >10% per cycle or generation. (e.g. Marbled Murrelet)	***Slow Downward Trend*** (e.g. Grizzly Bear, Fisher)	***Stable*** ± 5% per cycle or generation. (e.g. White Pelican)	***Increasing*** (e.g. Canada Goose)
5. Reproductive Potential Average annual number of young per female over life of female.	***Very Low*** < 1 (e.g. Grizzly Bear, Marbled Murrelet)	***Low*** 1 — 2 (e.g. Ancient Murrelet, Thinhorn Sheep)	***Limited*** 2 — 3 (e.g. Marten, Osprey)	***Moderate*** 3 — 4 (e.g. Beaver, Prairie Falcon)	***High*** ≥ 5 (e.g. Blue Grouse, Snowshoe Hare)
6. National and International Status Done at species level only.	***Unique*** Total world population in B.C. OR endangered everywhere. (e.g. Vancouver Island Marmot)	***Major*** > 20% of world's population in B.C. and rare elsewhere OR only Canadian population and rare elsewhere. (e.g. Keen's Myotis, Spotted Bat)	***Shared*** > 50% of world's population in B.C., common elsewhere. (e.g. Barrow's Goldeneye, Thinhorn Sheep)	***Unique in Canada*** Only Canadian population, common elsewhere, OR > 25% of world's population in B.C., common elsewhere. (e.g. Flammulated Owl, Harlequin Duck)	***Common*** Widespread in Canada, North America or circumpolar. (e.g. Black Bear, Mallard)

Species at Risk

The Red List

Endangered/Threatened Species

A. Species at Risk

The Red List — Endangered/Threatened Species

The species in the Red List are defined as having low abundance. They are legally designated as either ***threatened*** or ***endangered*** — or they are being considered as potential designates for such status — because they run the risk of extirpation or extinction.

Endangered species are any indigenous (native) species threatened with imminent extinction or extirpation throughout all or a significant portion of their range in B.C.. ***Threatened*** species are any indigenous species that are likely to become endangered in B.C. if factors affecting their vulnerability do not become reversed. Recovery plans are being written that outline strategies for regaining viable populations within the province.

Within each ecoprovince, required management activities are ranked in order of priority. Planned activities may be conducted by agencies other than B.C. Environment (e.g. the Canadian Wildlife Service and the Royal British Columbia Museum).

In the Red List and the lists that follow, if a population estimate is available for a species it is included in the "*Current Status in British Columbia*" column. Population estimates are obtained using a variety of methods — from counts to informed guesses. (If no estimate is available, no number has been provided.)

Red List — Endangered/Threatened Species

KEY TO SYMBOLS

C = Control of habitat (Crown and private)	PI = Population inventory and monitoring
HE = Habitat enhancement	R = Research
HI = Habitat inventory and monitoring	RP = Recovery plan in preparation
I = Input on land and water use activities	S = Status information (basis knowledge compilation)
PE = Population enhancement (e.g. transplants, predator control)	* = Currently designated as an endangered species in British Columbia

Species	*Current Status in B.C.*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
*American White Pelican**	Breeding population fluctuating (150 pairs). Single nesting colony at Stum Lake.	Sensitive to disturbance by people and low-flying aircraft; needs adjacent lakes with good fish stocks for foraging within 150 km of nesting colony. Recovery plan to be prepared.					PE I PI				
Anatum Peregrine Falcon	Low, but probably increasing.	Impacts have occurred from museum collecting, pesticide spraying of orchards and reduction of attendant prey.			PI	PI	PI	PI	PI	PI	PI

Species	*Current Status in B.C.*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
*Burrowing Owl**	Managed intensively. Less than 20 pairs; increasing due to introductions.	Populations expected to be re-established through continuing introductions in the Southern Interior Ecoprovince. Requires close monitoring over next decade. Recovery plan to be prepared.			PE HE I HI R	PE					
Canyon Wren	Probably stable. Populations local and small; restricted to Okanagan Valley and Arrow Lakes. Basic biology unknown.	Severe winters affect populations. Size and limits of population unknown — in Canada, only found in two locations (both in British Columbia).			C S HI PI I	I					

Cascade Mantled Ground Squirrel	Indeterminate; occurs in Canada only in Cascade Range, in southwestern British Columbia. May have much of the world's population in this province.	Requires field survey to determine extent of range and population status.	S R PI		S R PI HI						
Common Poorwill	Stable; restricted to Southern Interior Ecoprovince but entire range (breeding) unknown.	Need to maintain wetlands that produce flying insects, and monitor spraying programs in forests.			PI S HI						
Forster's Tern	Stable; fairly recent addition to breeding fauna. Breeds at single site — Duck Lake (Creston).	Protection of habitat and maintenance of water levels critical. Fish stocks must be maintained.				PI C					

Species	*Current Status in B.C.*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Fringed Myotis	Indeterminate; known to occur in Canada only in Okanagan; peripheral to Washington populations.	Vulnerable to disturbance by people.		S	S I PI HI						
Long-eared Keen's Myotis	Indeterminate; 90% of world population in British Columbia.	Vulnerable to loss of old-growth coastal forests. Intensive surveys on Queen Charlotte Islands and other coastal areas are planned.	S I PI	S I PI							
Marbled Murrelet	Unknown; probably decreasing due to habitat loss. One nest has been found in province. Significant part of N.A. population (perhaps world) breeds in B.C..	Probably uses old-growth forests; therefore, protecting those forests is essential to maintaining current populations. Recovery plan to be prepared.	S I								

Pallid Bat	Peripheral to Washington populations (in Okanagan); not seen for two years.	Vulnerable to increasing agricultural and urban development.			S I PI HI C						
Prairie Falcon	Decreasing (nesting); population unknown.	Historical impacts from museum collecting, disturbance at nest sites, use of pesticides — and pesticide load in prey species — has led to decrease. Important factors needed to stop decreases are: restrict/monitor use of pesticides, and lessen disturbance at nesting sites.			PI HI S	PI					
*Sea Otter**	Population increasing: 500+. Reintroduced in late 1960s and early 1970s into vacant habitat.	Vulnerable to marine oil pollution. Population monitoring to continue. Two more colonies to be established by transplanting otters. Recovery plan to be prepared.	PI PE								
Sharp-tailed Snake	Vulnerable (probably <100).	Habitat loss from urban development and intensive silviculture resulting in few downed logs (necessary for habitat). Survey to determine range and population status planned. Habitat protection needed.		S I PI							

Species	*Current Status in B.C.*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Short-horned Lizard	Indeterminate; peripheral in Southern Okanagan Basin Ecosection; no records for 90 years.	Plan to survey habitat in order to determine status.			S PI HI						
Spotted Bat	Vulnerable; northern limit of range in Southern Okanagan Basin Ecosection. Unknown in Washington.	Needs two more years of intensive survey to determine status; rare over its entire range in western North America.			S I PI HI C						
Spotted Owl	Probably decreasing even though 30 birds have recently been located in previously unknown habitats.	Maintenance and protection of old-growth forests of the Pacific and Cascade Ranges Ecoregion is essential. Potential interspecific competition with expanding populations of barred owls may negate management efforts. Recovery plan to be prepared.	PI	PI							

Thick-billed Murre	Increasing. One breeding location, on Triangle Island.	Vulnerable to human disturbance (helicopter landings, photography, etc.). Same guidelines for management as for common murre.	C								
Townsend's Big-eared Bat	Indeterminate; found across Southern British Columbia; not common.	Protect hibernacula and monitor populations at known sites.		S I PI	S I PI HI	S I PI					
*Vancouver Island Marmot**	Population increasing (300).	Populations continue to be closely monitored. Habitat acquisition will continue. Impacts of forest harvesting on habitat being studied. Recovery plan to be prepared.		PE R I							
White-tailed Jackrabbit	Indeterminate; peripheral in Southern Okanagan Basin Ecosection and Okanagan Ranges Ecoregion.	Vulnerable to habitat loss and pest control. Last seen in 1982; may be extirpated.			S C HI HE						
Wood Bison	No presently established population.	Current management plans for reintroducing wood bison in northeastern British Columbia could result in the establishment of this subspecies in its former historic range. Recovery plan to be prepared.							HI PE	HI PE	

Species at Risk

The Blue List

Sensitive/Vulnerable Species

The Blue List — Sensitive/Vulnerable Species

The species in the Blue List are ***sensitive/vulnerable:*** indigenous species that are not ***threatened*** but are particularly at risk. The reasons include low or declining numbers, and occurrence at the fringe of their range or in restricted areas. Population viability is therefore a concern, as shown by:

- Significant current or predicted downward trends in population numbers or density.

- Significant current or predicted downward trends in habitat suitability that would further reduce the species' existing distribution.

Species that are generally suspected of being vulnerable, but for which information is too limited to allow designation in another category, are included in this category.

Within each ecoprovince, required management activities are ranked in order of priority. Planned activities may be conducted by agencies other than B.C. Environment (e.g. the Canadian Wildlife Service and the Royal British Columbia Museum).

Blue List — Sensitive/Vulnerable Species

KEY TO SYMBOLS

C = Control of habitat (Crown and private)	PI = Population inventory and monitoring
HE = Habitat enhancement	R = Research
HI = Habitat inventory and monitoring	RP = Recovery plan in preparation
I = Input on land and water use activities	S = Status information (basis knowledge compilation)
PE = Population enhancement (e.g. transplants, predator control)	

Species	*Current Status in British Columbia*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
American Avocet	Increasing.	Pioneering into new habitats.		I	I	I					
Ancient Murrelet	Decreasing; restricted to Queen Charlotte Islands. Colonial.	Maintenance of current populations dependent on protection of coastal forests. Threat from introduced mammalian predators (e.g. rats, raccoons). Oil pollution/contamination critical from late March though June.	C								

Species	*Current Status in British Columbia*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Anna's Hummingbird	Local population.	Restricted by climate to southern Vancouver Island and Okanagan valley.		HE S							
Arctic Tern	Breeding population stable to slightly increasing.	Maintenance of wetlands habitat (Tatshenshini Basin Ecoregion) and nesting islands (Atlin Lake in Teslin Plateau Ecosection) needed. Full range not known.							I		
Badger	Decreasing; occurs across southern B.C. in grassland and dry forest habitats.	Vulnerable to habitat loss, to loss of prey species because of agricultural pest control, and to direct persecution in rangelands where its burrows may be considered a hazard to livestock.			S PI I C	S PI I C	S PI I C				
Bald Eagle	Stable (15,000 adult birds).	Continuation of stable populations is dependent on maintaining old-growth nesting and roosting trees.	I PI	I PI	I	I	I	I	I	I	I
Black-crowned Night Heron	Population increasing. One known nest site.	Has invaded province during last decade and now resident; increase should continue.		I							

Black-throated Green Warbler	Increasing; restricted to Peace Lowland Ecosection.	Ecological requirements unknown — recent arrival in British Columbia from Peace River area in Alberta. Need to inventory habitats to determine use.									I
Bobolink	Vulnerable.	Only breeding sites are in Northern Okanagan Basin Ecosection and southern part of Southern Interior Mountains Ecoprovince. Depend on the maintenance of hayland for breeding and foraging.			I	S I RI HI C					
Brandt's Cormorant	Breeding population fluctuating (150 pairs). Winter population stable (10,000 — 15,000 birds with migration from southern areas).	Vulnerable to disturbance on breeding grounds (aircraft, recreational boating); vulnerable to oil pollution at all times of the year.		C							
Brewer's Sparrow	Two distinct populations: Northern Okanagan Basin Ecosection probably decreasing slowly; Tatshenshini Basin Ecoregion stable.	In south-central interior, maintenance of open-country habitat with sagebrush/low shrub critical to survival. In northwest, tall willows are very important habitat. In latter, population may be restricted to altitudinal limits of tall willow growth. Herbicides may pose a threat to insect prey base.			I S R HI PI	I			I		

Species	*Current Status in British Columbia*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
California Gull	Breeding population increasing slowly: breeds at one site. Nonbreeding population stable.	Only breeding site (Okanagan Lake) protected by North Okanagan Naturalists Club. Population expected to increase — in time could become a pest species. Moulting/loafing sites on the west coast of Vancouver Island should be managed to minimize disturbance.	I	I	I						
Canada Warbler	Stable; restricted to Peace Lowland Ecosection.	Range, populations and ecological requirements unknown. Management intentions should consider survey of different habitats throughout Peace Lowland Ecosection.									I
Cape May Warbler	Low numbers.	Peripheral in Interior Plains portion of British Columbia.								I	I
Caribou	Stable (13,500).	Maintenance of current populations in central and southeastern parts of B.C.depends on protection of sufficient old-growth timber.				PE PI HI R	PI PE HI R	PI PE HI R	PI PE HI R	PI PE HI R	PI PE HI R

Caspian Tern	Increasing.	Pioneering into new habitats.				C					
Cassin's Auklet	Increasing; 70% of world population in British Columbia (1,100,000 pairs). Colonial.	Maintenance of current populations dependent on protection of coastal forests. Threat from introduced mammalian predators (e.g. rats, raccoons). Oil pollution/contamination critical from late March through June.	PI I C								
Clark's Grebe	Recently identified as a separate species.	Unknown.			S	S					
Coeur d'Alene Sala-mander	Indeterminate. Recently found near Kootenay Lake.	Plans to make an inventory of present status and habitat needs may lead to habitat protection.				S I					
Common Barn Owl	Decreasing slightly in Fraser Lowland Ecosection; increasing in Northern Okanagan Basin Ecosection.	Habitat loss due to conflicts with agriculture/urbanization. Readily accepts nest boxes. Not breeding in Interior yet but increase in records over past decade. Rodent poisoning programs are detrimental to this species.		HE PI	PI						

Species	Current Status in British Columbia	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Common Murre	Stable; all major sites protected by ecological reserves (Cleland I., Triangle I., Cape St. James).	Vulnerable to oil pollution for breeding/nonbreeding population — especially with huge influx of adults/young of year in late summer, from colonies in Oregon and Washington (of international significance). Guidelines for helicopter landings at sites (Triangle I.) and recreational activities (photography, etc.) are needed to reduce disturbance.	C								
Connecticut Warbler	Stable; restricted to Peace Lowland Ecosection. Range, populations and ecological requirements unknown.	Management intentions should consider survey of different habitats throughout Peace Lowland Ecosection.									I

Dall's Sheep	Stable (500); southernmost populations in Tatshenshini Basin Ecoregion and Tagish Highland Ecosection.	With adequate habitat protection, populations are expected to remain relatively stable. Long-term population stability will require countering negative impacts (from increasing access and resource development) with habitat enhancement.	PI HI						PI PE HI		
Fisher	Population declining throughout British Columbia. Population at bottom of cycle.	Habitat destruction though logging (particularly of mature timber) and overtrapping during periods of low cycles can lead to declines.	R PI		PI	PI	R PI S	PI S	PI	PI	PI S
Flammulated Owl	Stable; population migratory.	Maintenance of current populations dependent on protecting major forests within the Interior Douglas fir biogeoclimatic zone.			PI I HI	PI					
Fork-tailed Storm Petrel	Breeding population stable (190,000 pairs).	Threatened by introduction of predators (raccoon, rat, mink). Vulnerable to oil pollution. Logging of mature forests in colonial nesting areas (burrows) is causing loss of nesting habitat.	C								
Gopher Snake	Decreasing.	Habitat destruction. Often killed due to resemblance to rattlesnake. May be vulnerable to pet trade. Status will be monitored and its hibernacula use studied.			PI I S						

Species	*Current Status in British Columbia*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Grasshopper Sparrow	Unknown; probably decreasing due to local, restricted range in Southern Interior Ecoprovince.	Need to minimize disturbance to local breeding sites (in agricultural, tall-grass fields) and restrict mowing activities. Management plans should include extent and use of such habitats.			S I HI PI						
Gray Flycatcher	Recently invaded province and now established as a breeding species near Oliver.	Monitor expansion/growth to determine ecological requirements. Minimize disturbance from birders, photographers, other recreationalists (all-terrain vehicles) until population well-established.			I S HI PI						
Gray-cheeked Thrush	Stable; precise range, biology and habitat requirements unknown. Restricted to northwestern portion of British Columbia.	Immediate threat is habitat loss (spruce/willow) caused by mining operations.							I		

Great Basin Pocket Mouse	Indeterminate; restricted in Canada to dry valleys of the Southern Interior Ecoprovince.	Decreasing because of loss of native sagebrush and grassland habitat to agriculture and residential development.			PI						
Great Blue Heron	Breeding population fluctuating (110 nesting colonies).	Vulnerable to pollution of marine environment. Vulnerable to human disturbance. Loss of undisturbed large mature tree stands, with adjacent foraging areas, could become critical. In Georgia Depression Ecoprovince, eggs recently found with high dioxin levels.	I	R PI	PI S HI	I					
Green-backed Heron	Breeding population increasing (about 50 pairs). Recently established from south; breeding restricted to Georgia Depression Ecoprovince.	Populations should continue to expand.		PI							

Species	Current Status in British Columbia	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Grizzly Bear	Stable to decreasing (12,500).	Resource developments and increased human populations, leading to more access and industry, will continue to cause negative impacts on grizzlies. The retention of wilderness and/or low-development areas is a key to the long-term maintenance of good numbers of grizzly bears. Mortality factors must be closely monitored to prevent population declines.	HI		HI R PI I	HI R	R	PI HI	PI	I PI	PI
Ground Snake	Indeterminate; one specimen recently found at Proctor by Kootenay Lake (800 km north of nearest known populations in southern Idaho).	Adjacent areas will be surveyed to determine status and range.				S					
Gyrfalcon	Stable to slight increase. Population expected to remain stable.	Regular inventories needed.							PI		

Horned Puffin	Low populations.	Peripheral species.	C								
Hudsonian Godwit	Breeding stable. Nonbreeding increasing. Significant numbers migrate through Peace Lowland Ecosection.	Maintenance of wetlands important. Breeding range not well known.							PI I		I
Leach's Storm Petrel	Breeding population stable (460,000 pairs).	Nest in mixed colonies with Fork-tailed Storm Petrel. Prognosis similar.	C								
Least Sandpiper	Breeding increasing; 100 pairs nest at Delkatla Inlet (Queen Charlotte Lowland Ecoregion); recent invasion. Rest of breeding range imperfectly known.	Water control structure on its principal breeding habitat (Delkatla Inlet) is detrimental. Mud flats are important habitat and should be kept unpolluted.	C I						I		
Le Conte's Sparrow	Low numbers.	Peripheral in Peace Lowland Ecosection.									I
Lesser Golden Plover	Stable; breeding range unknown.	Minimal management attention needed during migration. Inventory of Tatshenshini Basin and Northern Boreal Mountains Ecoregions is needed.							I		

Species	*Current Status in British Columbia*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Lewis' Woodpecker	Decreasing; absent from much of its former range in southwestern portion of province.	Slow decline has been attributed to orchard spraying and contamination/ disappearance of prey; also competition for nest sites with starlings.		I C	I C S PI HI	I C					
Long-billed Curlew	Probably decreasing.	Management of grassland breeding areas needed (e.g. recreational, agricultural conflicts).			PI I	R HI I	R H I				
Mourning Warbler	Stable; restricted to Peace Lowland Ecosection. Range, populations and ecological requirements unknown.	Management intentions should consider survey of different habitats throughout Peace Lowland Ecosection.									I
Night Snake	Indeterminate; found only twice in British Columbia (last time in 1989).	Inventory needed in the Southern Okanagan Basin Ecosection.			S I PI HI						

Northern Long-eared Myotis	Indeterminate; occurs in Boreal Plains Ecoprovince; peripheral to other Canadian populations.	Vulnerable to disturbance of hibernacula.									S PI
Northern Shrike	Stable — decreasing.	Unknown. Breeds in Tatshenshini Basin Ecoregion.							PI		
Nuttall's Cottontail	Indeterminate (vulnerable); occurs only in Southern Okanagan Basin Ecosection.	Vulnerable to habitat loss caused by housing and agricultural development. Requires field survey to determine status.			S I PI C HI						
Pacific Giant Sala-mander	Decreasing.	Loss of habitat. Requires cold mountain streams and lakes. Need to maintain known habitat; continue field surveys.		PI I							
Pacific Jumping Mouse	Indeterminate; occurs in Canada only in Georgia Depression Ecoprovince.	Requires field survey to determine population status. Loss of riparian habitat may be an impact.		S I PI							
Pacific Loon	Breeding range expanding. Winter population stable. Expanding eastward across northern British Columbia.	Maintenance of fish stocks and water levels critical; vulnerable to marine oil pollution in winter.	I	I					I		

Species	Current Status in British Columbia	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Pacific Water Shrew	Indeterminate; occurs in Canada only in Fraser Lowland Ecosection.	Vulnerable to habitat disturbance. Needs field survey.	S I PI								
Peale's Peregrine Falcon	Stable throughout North Coast; Queen Charlotte Islands is the main breeding locality.	Need to protect habitat for prey base. Possible impact from introduced predators.	R PI								
Philadelphia Vireo	Low numbers; peripheral in Peace Lowland Ecosection.	Stable to decreasing. Vulnerable due to low numbers and aspen harvesting.									I
Plains Bison	Increasing (500).	The future numbers of free-ranging plains bison will depend upon the final resolution of the status of the present Sikanni River valley herd.							PI HI PE		PE HI HE

Purple Martin	Stable to slightly increasing on Nanaimo Lowland Ecosection; extirpated on Fraser River Delta.	Habitat loss, urbanization and competition with other cavity-nesting species listed as threats to future existence. Some success with nest-box programs. That should be encouraged in areas where loose colonies are presently thriving.		PI							
Red-tailed Chipmunk	Indeterminate; occurs in Canada only in southeastern British Columbia and southwestern corner of Alberta.	Requires field survey to determine extent of range and population status.				S					
Rhinoceros Auklet	Increasing (223,000 pairs). In summers, birds breed on Protection Island, Washington. Forage off south Vancouver Island.	Maintenance of current populations dependent on protection of coastal forests. Threat from introduced mammalian predators (e.g. rats, raccoons). Oil pollution/contamination critical from late March though June.	C								
Ring-billed Gull	Breeding increasing — only two colonies (Okanagan Lake, Fraser Lake). Nonbreeding population in summer/autumn on southwest coast.	Both breeding sites are protected. Need policy to minimize disturbance; population expected to increase. It could become a pest if it occurs in large numbers.			I		I				

Species	Current Status in British Columbia	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Roosevelt Elk	Stable to increasing (2,500).	Overall, the species is expected to remain stable or increase due to transplants; however, some populations are declining.	PI HI HE PE	PI HI HE PE							
Sage Thrasher	Unknown; probably decreasing as suggested by present difficulty in finding animals at formerly known locations. Restricted to Southern Interior Ecoprovince.	Changing land-use patterns (agriculture to urbanization) and farming practices pose major threat to existence.			I S PI HI C						
Sharp-tailed Sparrow	Stable; peripheral, in Tatshehshini Basin Ecosection.	No immediate threat to habitats.							PI		

Short-billed Dowitcher	Breeding populations probably increasing slightly. Nonbreeding populations stable. Extent of breeding range unknown.	Maintenance of breeding on Queen Charlotte Lowland Ecoregion depends on stable water levels at Delkatla Inlet.	C								I
Shrew Mole	Indeterminate; occurs in Canada only in Fraser Lowland Ecosection (peripheral to Washington populations).	Vulnerable to rodent control in urban and agricultural areas, as well as to habitat loss.		S							
Smith's Longspur	Stable; peripheral, in Tatshenshini Basin Ecoregion.	Stable.							PI		
Southern Red Bat	Indeterminate; peripheral to Washington populations; more common elsewhere in Canada.	Vulnerable to loss of habitat since it uses tree roosts.		S I PI	S I PI HI						
Tailed Frog	Decreasing.	Loss of habitat; requires cold mountain streams and lakes. Need to maintain known habitat; continue field surveys.	S I PI	S I PI	S	S I PI					

Species	*Current Status in British Columbia*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Tiger Salamander	Decreasing; peripheral in Southern Okanagan Basin Ecosection.	Losses due to habitat destruction and lake rehabilitation for fisheries. Need to monitor these rehabilitations to protect known populations.			S I PI						
Townsend's Chipmunk	Indeterminate; occurs in Canada only in Fraser Lowland Ecosection.	Requires field survey to determine extent of range and population status.		S	S						
Townsend's Mole	Indeterminate (probably rare); occurs in Canada only in Fraser Lowland Ecosection; peripheral to Washington populations.	Vulnerable to rodent control in urban and agricultural areas.		S I PI							
Trowbridge's Shrew	Indeterminate; occurs in Canada only in Fraser Lowland Ecosection.	Vulnerable to habitat loss or disturbance. Needs field survey.		S							

Tufted Puffin	Stable.	Nests on grassy coastal islands. Vulnerable to oil spills and habitat disturbance.	PI I C								
Tundra Shrew	Indeterminate; isolated population in Tatshenshini Basin Ecoregion (500 km from nearest Alaska and Yukon populations).	Field survey may be carried out.							S		
Vaux's Swift	Stable.	Cavity nester.	PI	PI	PI	PI	PI				
Wandering Tattler	Stable.	Minimal management needed during nonbreeding. Inventory of Tatshenshini Basin Ecoregion is needed. Protection of inland gravel/scree areas needed.							PI I		
Western Bluebird	Decreasing in Interior, increasing on south coast.	Decline attributed to orchard spraying programs and competition with starlings, also habitat loss due to changing land uses. Nest-box programs in southern portion of the province and Peace Lowland Ecosection responsible for slight increase in numbers. Need to maintain open agricultural land with nearby nesting habitat (deciduous groves) to assure continuing population.		PE	PE	PE					PE

Species	Current Status in British Columbia	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Western Grebe	Breeding population decreasing (200 ± pairs). Winter population stable (20,000 birds). Only three breeding colonies left in B.C..	Human disturbance and boating activities are a problem. In winter, vulnerable to marine oil pollution.		I	PI I						
Western Harvest Mouse	Indeterminate; restricted in Canada to the dry valleys of the Southern Interior Ecoprovince.	Decreasing because of loss of native sagebrush and grassland habitat to agriculture and residential development.			S PI HI I						
Western Rattle-snake	Decreasing (>10,000).	Habitat loss from urban development and direct persecution. Vulnerable to pet trade and commercial exploitation; some road kill occurring.			PI I HI R						
Western Small-footed Myotis	Indeterminate; peripheral to Washington populations in southern B.C..	Vulnerable to habitat disturbance.			S I PI						

White-headed Woodpecker	Stable; may be slightly increasing. Restricted range; Okanagan valley only Canadian population.	Control/prohibit/monitor spraying programs in Interior forests. Maintain/manage mixed forest habitats. Interspecific competition and effects on small populations not known.			I S PI HI						
White-throated Swift	Probably stable; numbers, productivity and basic biology unknown.	Localized breeding in cliffs; probably hoodoos as well. Maintenance of nesting sites (most colonies) needed. Population inventory necessary.			I S		I				
Williamson's Sapsucker	Slowly increasing range; population size unknown.	Maintenance of populations dependent on protection of forest habitat within known range (Southern Interior and Southern Interior Mountains Ecoprovinces). Altitudinal limit of range not clearly defined. Interspecific competition for nesting cavities unknown.			I S PI HI	I					
Yellow-breasted Chat	Probably decreasing; restricted to Southern Interior Ecoprovince.	Maintenance of current small and local populations dependent on protection of riparian habitats (thickets, tall shrubbery).			I S PI HI						

Species not at Risk

The Yellow List

Management Emphasis Species

B. Species Not at Risk

The Yellow List — Management Emphasis Species

The species in the Yellow List have populations that are managed to meet specific public demands, including most game and furbearing species.

A management plan or status report will be prepared for each of the species in the Yellow List. Monitoring of populations, habitats and public use will be ongoing. ***Since Yellow-List species will be highlighted in their own management plans, only breeding biology information (by ecoprovince) is shown here.***

Yellow List — Species Not at Risk: Management Emphasis Species

KEY TO SYMBOLS

B	= Breeding on a regular basis
M	= Migration through, or seasonal movements: may include only accidental occurrences
R	= Year-round resident, including breeding populations
W	= Wintering

Species	*Current Status in British Columbia*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
American Wigeon	Breeding population stable; winter population throughout Georgia Depression Ecoprovince stable, mostly in the Fraser River Delta. Hundreds winter in Southern Interior Ecoprovince.	Loss of wetland habitats for breeding and estuarine habitats for wintering.	W	B W	B W	B	B	B	B	B	B

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Band-tailed Pigeon	Increasing (5,000 — 10,000).	Main populations in Georgia Depression Ecoprovince. Expanding range into interior of British Columbia.	B	B W	M	M	M	M			
Barrow's Goldeneye	Population stable. British Columbia supports between 60% — 90% of world population.	Marine oil pollution throughout year a threat, especially in spring when birds are concentrated at Pacific herring spawning areas. Summer postbreeding moulting areas for males unknown. Loss of cavities (large deciduous trees) are a concern. Loss of wetland habitats.	W	W	B	B	B	B	B	B	B
Beaver	Population stable to increasing (400,000 — 600,000).	Population liable to decrease primarily due to overuse of habitat which will increase likelihood of epizootic disease.	R	R	R	R	R	R	R	R	R

Black Bear	Stable (120,000).	Populations are expected to continue to do well in most areas as this species is fairly adaptable to habitat changes. But as bears are forced into close contact with humans, mortality will increase (i.e. animal control). Need for public education and strict control of garbage.	R	R	R	R	R	R	R	R	R
Black Scoter	Populations (nonbreeding) stable; localized.	Local winter populations (e.g. Qualicum Beach, Baynes Sound, Campbell River, Crescent Beach) vulnerable to oil pollution at sea. Summer moulting populations small.	W	W	M	M	M				M
Blue Grouse	Fluctuating in interior of British Columiba; slow decline on coast; (500,000 — 1,000,000).	Will continue to decline on coast of B.C. due to fire suppression, regrowth of extensive logged areas and logging of high-elevation winter range.	R	R	R	R	R	R	R		
Blue-winged Teal	Breeding population stable; winter population very small and local.	Numbers fluctuate annually depending on water conditions in other parts of their range. Moulting flocks vulnerable from mid-July to mid-August. Loss of marsh habitat a concern.	B	B W	B	B	B	B	M B	B	B

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Bobcat	Low, stable populations existing principally in southern interior portion of British Columbia.	Populations are expected to remain stable in present habitat. Bobcat in British Columbia are at the northern limit of their range.	R	R	R	R	R	R			
Brant	Drastic declines as wintering species generally. Population stable; abundant in spring migration.	Preserve/enhance eelgrass (*Zostera marina*) — most important food. In spring migration, need to minimize disturbance in staging areas. Susceptible to oil pollution.	M	M							
Buffle-head	Breeding and wintering populations stable. Centre of abundance in winter is southern Strait of Georgia Ecoregion.	Cavity nester. Availability of nest sites influences population size. Population threats include: Marine oil pollution throughout the year and loss of wetlands (Interior). Moulting areas of males (after breeding) poorly known.	W	B W	B W	B	B	B	B	B	B

California Bighorn Sheep	Stable and increasing (3,000).	Populations are expected to continue to do well in the near future if current strategies for population management and habitat protection are continued. The retention of key winter ranges will be necessary to ensure the long-term viability of bighorn populations.			R		R				
California Quail	Stable Interior populations; declining on coast; (150,000 — 250,000).	Changing agricultural practices and urbanization contribute to decline in Georgia Depression Ecoprovince.		R	R	R					
Canada Goose	Breeding range expanding; winter population greatly increasing in southern portions of province.	Species a pest in many southwest municipalities. Adaptable, no real threats to survival.	B W	B W	B W	B	B	B	B	B	B

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Canvasback	Breeding population small and centred in Chilcotin-Cariboo Basin Ecosection. Winter population in hundreds, mainly southern Stait of Georgia Ecoregion. Both populations are slowly decreasing.	Disturbance and loss of habitat blamed for losses. In winter, vulnerable to oil pollution due to flocking behaviour.	M	W	B W	M	B				
Chukar	Introduced; declined in past; present population fluctuating (10,000 — 15,000).	Winter feeding required during hard winters to maintain populations.		M	R	M	M				

Cinnamon Teal	Breeding population stable; very few winter on coast. Reaches northern limit of its breeding range in southern British Columbia. Centre of abundance Chilcotin-Cariboo Basin Ecosection	Loss of wetlands a concern.	M	B	B	B	B	M	M		M
Clouded Sala-mander	Decreasing.	Intensive silviculture in old-growth Douglas fir decreases decadent trees and logs, and decaying wood. Need to survey for range, and protect some habitat.	R	R							
Coastal Black-tailed Deer	Decreasing (200,000).	Expected reversal of the declining trend if wolf numbers decrease on Vancouver Island.	R	R							
Collared Pika	Indeterminate (probably common); peripheral in British Columbia.	Very restricted range and habitat in Tatshenshini Basin Ecoregion. Need field survey to locate colonies, approximate numbers, and to determine population status.							R		

Species	*Current Status in B.C.*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Common Goldeneye	Breeding populations increasing as range expands throughout province. Winter numbers stable to slightly increasing.	Range expansion staged in 1960s. Loss of nesting cavities a concern.	W	B W	B W	B	B	B	B	B	B
Common Merganser	Breeding and wintering populations stable. Widely distributed.	Conflicts with fisheries (marine and fresh water). Portion of population cavity nesters. Need to maintain large trees (coniferous and deciduous). Flocks in hundreds in winter (potential problems from oil and chemical pollution).	B W	B W	B	B	B	B	B	M	B
Cougar	Stable to increasing (3,000).	Populations are expected to fluctuate primarily in line with available deer numbers.	R	R	R	R	R	R			R

Coyote	Stable to increasing population found throughout mainland British Columbia.	Populations fluctuate due to availability of food and occasional disease (primarily mange) outbreaks. Range appears to be increasing slightly. May be a problem near cities and in agricultural areas.	R	R	R	R	R	R	R	R	R
Crested Myna	Introduced; now resident of city of Vancouver.	Slowly decreasing; loss of breeding habitat by changing building and landscape designs.		R							
Douglas Squirrel	Both Douglas and red squirrel populations stable (10 — 20 million combined).	Populations will continue to be numerous but will fluctuate directly with cone crop abundance.	R	R							
Eared Grebe	Breeding population increasing. Winter population stable. Colonial in wetlands.	Loss of breeding habitat by draining for agriculture or urban expansion could become a problem. Recreational boating in resting areas could have negative impact.	W	W	B	B	B	M	M	M	B
Ermine	Moderate to abundant across B.C.; harvest returns suggest fluctuating populations (350,000 — 750,000).	Population density varies with season and prey species availability.									

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Eurasian Wigeon	Populations (nonbreeding) increasing steadily throughout province. Does not yet breed in British Columbia.	General nonbreeding range slowly expanding throughout British Columbia. Wintering population on south coast increasing.	M	W	M	M	M				M
Eurasian Skylark	Introduced, now resident of Saanich Pennisula.	Slowling decreasing. Dependent upon undisturbed grass fields and agricultural areas.		R							
Fisher	Population declining throughout British Columbia. Population at bottom of cycle.	Habitat destruction through logging (particularly of mature timber) and overtrapping during periods of low cycles can lead to declines.	R		R	R	R	R	R	R	R

Gadwall	Breeding and wintering populations slowly increasing. Winter numbers largest on Nanaimo Lowland, Fraser Lowland and Southern Okanagan Basin Ecosections.	Breeding range expanding northward along coast, eastward across southern British Columbia and northward to Peace Lowland Ecosection. Loss of wetland habitat (draining) a concern.	M	B W	B W	M B	B	M	M	M	B
Gray Partridge	Introduced; fluctuating (2,000 — 5,000).	Small viable populations. Habitat loss a problem.		R	R		M				
Gray Wolf	Variable (7,500).	Populations in remote areas expected to fluctuate mainly in line with available ungulate numbers. In areas closer to settlements and agriculture operations, wolf numbers are expected to decline over the long term.	R	R	R	R	R	R	R	R	R
Great Basin Spadefoot Toad	Indeterminate. Occurs primarily in Southern Interior Ecoprovince.	Populations cyclical; highly dependent on water for breeding. Vulnerable to collection for the pet and scientific trade.			R						
Greater Scaup	Migration and wintering populations stable.	Vulnerable to oil pollution in marine environment due to flocking habits all year.	W	W	W	M	M	M	M	M	M

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Greater White-fronted Goose	Pacific Flyway population has declined by 50% since 1950s; most migrants bypass B.C..	Difficult to manage since the number seen in British Columbia is small compared to total population. Stages in wetlands and open grass fields. Overhunting elsewhere a concern.	W	W	M	M	M	M	M	M	M
Green-winged Teal	Breeding and wintering population stable.	Tidal mudflats used more by this species than any other duck. Loss of wetlands (draining, etc.) for breeding/ staging is a concern.	B	B W	B	B	B	B	B	B	B
Harlequin Duck	Populations stable. Majority of Canadian population in B.C..	Vulnerable to oil pollution at sea, especially during moulting periods in summer, when birds are flightless. Maintain unpolluted interior streams/rivers for breeding.	B W	B W	B	B	B	B	B		B
Hooded Merganser	Breeding and wintering populations stable. Breeding mainly in southern third of province.	Cavity nester; loss of suitable deciduous trees a problem. Management enhancement through nest boxes.	B W	B W	B W	B W	B	B	M	M	M

Least Weasel	Probably common (sparsely distributed).	May be susceptible to accidental overharvest by trappers (no fur value). Requires system for recording that harvest to allow better determination of its status and range.				R	R	R			
Lesser Scaup	Breeding and wintering populations stable, as for greater scaup.	Often disturbed by recreational boaters when in freshwater habitat. Drainage of wetlands for agriculture is also a concern.	W	W	B W	B	B	B	B	B	B
Long-tailed Weasel	Moderate to abundant throughout British Columbia; harvest returns suggest fluctuating populations (350,000 — 750,000).	Population densities vary with season, food availability and species. Availability of water in summer appears to be the only limiting factor in distribution.		R	R	R	R				
Lynx	Population declining (20,000 — 80,000).	Populations fluctuate following snowshoe hare population levels. High fur values may lead to intense harvest pressure during low population stages of lynx cycle. Require possible modifications to harvest strategy, including quotas. Work needed on impacts of forest harvesting on habitat values.			R	R	R	R	R	R	R

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Mallard	Breeding and wintering population stable. In Fraser Lowland Ecosection winter population slightly increasing.	Adaptable/versatile species; no immediate concerns. Fraser River Delta supports largest numbers in province; preservation of estuarine marshes and adjoining fields important.	B W	B W	B W	B W	B	B	B	B	B
Marten	Moderate to abundant populations throughout B.C. (150,000 — 200,000).	Populations harmed by some types of logging (clearcutting and burning) which reduce small mammal populations and cover. Species is easily trapped and therefore sensitive to local overtrapping.	R	R	R	R	R	R	R	R	R
Mink	Populations stable; moderate to abundant densities throughout B.C.; not in jeopardy (50,000 — 100,000).	Population declines can be brought about through loss of coastal and wetland habitats. Species can be easily overtrapped, which can bring population densities to a level where recovery can be very slow.	R	R	R	R	R	R	R	R	R

Moose	Stable to increasing (165,000).	Species range is expanding due to favourable land use changes, and populations are expected to remain stable or increase.	R		R	R	R	R	R	R	R
Mountain Beaver	Indeterminate; occurs in Canada only in southwestern portion of British Columbia.	Need field survey to determine extent of range; may be vulnerable to pest control in forestry plantations.	R	R	R						
Mountain Goat	Stable to increasing (55,000).	Populations are expected to continue to fluctuate primarily in relation to winter/spring weather conditions. Negative habitat impacts associated with increased access and resource developments, although not a widespread threat for this species, will continue to be a problem for some populations.	R		R	R	R	R	R		R
Mountain Quail	Declining. Very low, no estimate available.	Found only on southern Nanaimo Lowland Ecosection and on the Gulf Islands.		R							
Mourning Dove	Increasing (15,000 — 25,000).	Wintering populations increasing in southern British Columbia.	M	B W	B	B	B	M	M	M	M

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Mule Deer	Increasing (135,000).	Current populations are increasing due to a succession of mild winters. In the event of one or more severe winters, a major decline is expected, partially due to the loss of old-growth forest.	R		R	R	R	R		R	R
Muskrat	Population stable (3 — 4 million).	Population likely will fluctuate because of changing water levels and winter severity.	R	R	R	R	R	R	R	R	R
Mute Swan	Introduced species. Breeding and wintering populations increasing slightly; restricted to Gulf Islands and southern Nanaimo Lowland Ecosection.	Of management concern due to conflicts with native species of waterfowl. Populations might have to be controlled.		R	R	M	M				

Northern Pintail	Populations fluctuate wildly due to prairie drought conditions. Main staging areas: Clayoquot Sound and Fraser River Delta.	Preservation of wetlands critical, especially during periods of prairie drought. Loss of estuarine habitat used in migration and winter is a concern.	M B	W B	B	B	B	B	B	B	B
Northern Shoveler	Populations (breeding and winter) increasing slightly. Breeding centres: Chilcotin-Caribou Basin and Peace Lowland Ecosections.	Increase due to manipulation and preservation of wetlands habitats. Loss of wetlands and shallow sloughs a threat.	M	B W	B	M B	B	B	B	B	B
Oldsquaw	Single breeding record. Winter populations stable; locally and irregularly abundant along the coast.	Vulnerable to oil pollution generally; highly vulnerable locally where birds aggregate.	W	W	M	M	M	M	B	M	M
Osprey	Stable.	Relatively adaptable to manmade nesting structures and new habitats; susceptible to poisoning from toxic chemicals in prey species. Populations expected to remain stable.	B	B W	B	B	B	B	M B	M	B

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Painted Turtle	Decreasing.	Habitat being destroyed by urban and lakeshore developments. May be affected by chemicals used in lake rehabilitation (requires further investigation). Commercial exploitation may have significant effect. Inventory will be carried out.		R	R	R					
Pileated Woodpecker	Indeterminate.	Need studies to determine effects of harvesting old-growth forest on populations.	R	R	R	R	R	R	M	M	M
Raccoon	Population stable to increasing, with periodic fluctuations.	Raccoon are numerous to very abundant in southwestern B.C. and coastal islands, but fluctuate because of epizootic diseases of distemper when populations are high. A chronic nuisance in urban areas.	R	R	R	R					

Red-breasted Merganser	Only 10 breeding records for province. Centre of winter abundance on coast is Strait of Georgia Ecoregion; in Interior it is Northern Okanagan Basin Ecosection.	Most marine of mergansers. Vulnerable to oil pollution.	B W	W	M W	M	M	M	B M	M	M
Red Fox	Population stable to increasing at lower than historic levels.	Fox populations were high in British Columbia until late 1940s when they dropped dramatically over four years (likely due to an epizootic disease). Recovery is occurring but much of their habitat is now occupied by coyote, preventing more rapid fox population increases.	R	R	R	R	R	R	R	R	R

Species	*Current Status in B.C.*	*Prognosis, General Comments and Proposed Activities*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Redhead	In North America considered of "special concern" due to declines in eastern U.S.A.. Breeding populations declining (especially Northern and Southern Okanagan Basin Ecosection). Winter population in Southern Interior Ecoprovince increasing greatly.	Loss of wetland breeding habitat of concern. Staging areas in migration (e.g. Duck Lake) and main wintering lakes (Okanagan Lake) are critical habitats. Need to minimize disturbance and fuel spills.	M	W	B W	B	B	B	M	M	B

Red Squirrel	Both red and Douglas squirrel populations stable (10 — 20 million combined).	Populations will continue to be numerous but fluctuate directly with cone crop, especially spruce.	R	R	R	R	R	R	R	R	R
Ring-necked Duck	Breeding population slowly increasing. Winter population stable.	Breeding range expanding northward. 70% of British Columbia birds winter in California. Local flocks in winter vulnerable to indiscriminate hunting and chemical spills.	M W	B W	B W	B	B	B	B	B	B
Ring-necked Pheasant	Introduced; declining (10,000 — 15,000).	Will remain at present low levels. Changing agricultural practices, urbanization and possible predation by coyotes have contributed to declines.	M	R	R	R	R				
River Otter	Stable populations; relatively abundant in coastal British Columbia (15,000 — 30,000).	Loss of habitat through human settlement, attendant changes through destruction of riparian habitat, and loss of stream quality through pollution can produce significant declines. Susceptible to trapping on a local basis; impact of fish farms on populations a concern.	R	R	R	R	R	R	R	R	R
Rock Ptarmigan	Stable, periodic fluctuations.	Habitat for this species has not been affected, except locally by mining activities.	R					R	R		

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Rocky Mountain Bighorn Sheep	Stable to increasing (2,500).	Maintaining current management and habitat protection strategies should allow populations to continue to do well in the near future. The retention of key winter ranges will be necessary to ensure the long-term viability of bighorn population.			R	R		R			
Rocky Mountain Elk	Increasing (35,000).	Populations expected to remain healthy in the East Kootenay, where most of the animals occur. There are some conflicts, however, with agricultural land uses.	R		R	R		R	R		R
Rubber Boa	Indeterminate, sometimes common. Occurs broadly across the southern third of the province at low to moderate elevations; very tolerant of cold.	Largely fossorial and nocturnal. Very vulnerable to collection for the pet trade.		R	R	R	R				

Ruddy Duck	Breeding population slowly increasing and expanding range, mainly in Chilcotin-Cariboo Basin Ecosection.	Two moults — one in August, one in late winter-early spring. That, plus flocking habits at the same time make them vulnerable to pollution. Maintenance of wetlands is important.	M	B W	B	B	B	M B	M	M B	B
Ruffed Grouse	Continued fluctuating population (3 — 4 million).	Logging of mature aspen, a winter food source, could become a problem.	R	R	R	R	R	R	R	R	R
Sandhill Crane	Stable generally; local declines (e.g. Pitt Meadows, Fraser Lowland Ecosection). Populations unknown; major migration route through Interior.	Habitat loss generally the major problem (wetlands). Protection of staging habitats during migration is critical. Important nest sites widely scattered and difficult to manage.	B M	B M	B M	M	B M	M	M	B M	M
Sharp-tailed Grouse	Declining in grasslands, increasing in Chilcotin-Cariboo Basin Ecosection.	Loss of general habitat and particularly breeding grounds (leks) due to fire suppression, urbanization, grazing and agriculture is causing declines in grasslands. Hunting may have contributed to problem. Logging in Chilcotin-Cariboo Basin Ecosection is providing temporary habitat and increasing populations.			R	R	R	R	R	R	R

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Snow Goose	Wintering population from Fraser River Delta south to Puget Sound; population fluctuates but is considered stable; this population breeds on Wrangel Island (U.S.S.R.).	Estuarine salt marshes with bulrush rhizomes available as food are critical habitat (e.g. Fraser River Delta). Need to minimize disturbance (low-flying aircraft, air boats).	M	W	M	M	M	M	M	M	M
Spotted Skunk	Indeterminate; restricted in Canada to extreme southwestern part of British Columbia.	May be a pest; requires minimal field survey; moving northward slowly.	R	R							
Spruce Grouse	Fluctuating (1 — 2 million).	May have increased in a few regions due to fire suppression.	R		R	R	R	R	R	R	R

Stone's Sheep	Stable (11,500).	With adequate habitat protection, populations are expected to remain relatively stable. Continuation of that stability over the long term requires habitat enhancement to counter impacts from increasing access and resource developments.						R	R		R
Striped Skunk	Rare in coast forests and Vancouver Island; absent in northeastern portion of province; moderate to abundant densities elsewhere; populations stable, not in jeopardy.	Numbers affected by use of insecticides in agricultural areas. Adaptable to a variety of open-forest, agricultural and manmade habitats.		R	R	R	R	R	R	R	R

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Surf Scoter	Only six breeding records for British Columbia. Summer and winter populations stable. Sizeable proportion of North American population depends on British Columbia coastal habitats for survival.	Vulnerable to marine oil pollution throughout year. Expecially vulnerable in spring at Pacific herring spawning areas along the coast.	W	W	M	M	M	M	M	B M	B M
Trumpeter Swan	Breeding range expanding; winter population increasing. Half of current population winters in British Columbia.	Habitat availability for breeding should be determined. Need protection and maintenance of habitat on estuaries: major wintering site.	B W	W	M W	M	M	M W	M B	B M	B M

Tundra Swan	Populations of spring and autumn migrants stable to slightly decreasing. Winter populations local, but relatively stable. Steady declines in some staging areas (e.g. Creston).	Migrating birds use three corridors through province — coastal, interior and northeastern B.C.. Major staging areas along corridors must be managed, preserved and kept undisturbed. Local winter populations (e.g. South Thompson River) susceptible to pollution and disturbance.	M W	M W	W M	M	M	M	M	M	M
Turkey Vulture	Stable; population unknown.	Loss of nesting habitat due to urban and agricultural developments, eating poisoned carcasses (coyote control), eggshell thinning. Must protect roost trees/sites in autumn migration.	M	B M	B M	B M					
Western Yellow-bellied Racer	Indeterminate; likely common. Occurs in Southern Interior Eco-province at low elevations.	Vulnerable to collection for the pet and scientific trade.			R						
White-tailed Deer	Increasing (43,000).	Populations are expected to continue to increase with minimal management due to the species' opportunistic use of expanding agricultural land for feeding and cover.			R	R			R		R

Species	Current Status in B.C.	Prognosis, General Comments and Proposed Activities	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
White-tailed Ptarmigan	Fluctuating; 50% — 70% of the world population of white-tailed ptarmigan is found in B.C.	Habitat for this species has not been affected, except locally by mining activities.	R		R	R	R	R	R		
White-winged Scoter	Breeding and wintering populations stable.	As for surf scoter. Loss of wetland habitats in Interior for breeding.	W	W	B M	M	B M	M	B M	B M	B M
Wild Turkey	Introduced into adjacent habitat in U.S.A.. Small population increasing in a few locations in southeastern British Columbia.	Small populations may be viable in Kootenays and Okanagan. Huntable population to be maintained in Creston Valley.			R	R					
Willow Ptarmigan	Stable; periodic fluctuations.	Habitat not affected, except locally by mining.	R				R	R	R		

Wolverine	Population stable with periodic fluctuations.	Maintenance of habitat diversity is key to maintaining viable populations of wolverines. Reserves appear to play an important role in harvest management. Natality rates and survivorship are positively linked with winter severity on ungulates.	R		R	R	R	R	R	R	R
Wood Duck	Breeding population slightly reduced; wintering population stable.	Loss of large deciduous trees (e.g. cottonwood) as nest sites a concern. Habitat enhancement (tree planting) along dikes/shores and nest box program will continue or be reactivated.	W M	B W	B W	B	B				
Yellow-headed Blackbird	Decreasing.	Current populations are decreasing due to draining of wetlands for irrigation and pastures.			B	B	B				

APPENDIX 3

WILDLIFE HABITATS OF MAJOR CONCERN

The habitats in this list have been identified as being of key concern for the continued well-being of the province's wildlife species. Some habitats are rare in the province; others are susceptible to major impacts from human activities such as urban expansion, agricultural practices and timber harvesting. The habitats vary from broad, landscape features to specific habitat elements.

For each of the following habitats, monitoring of habitat use and making an inventory of habitat availability will continue. Strategic plans will also be developed.

Within each ecoprovince, required management activities are ranked in order of priority. Planned activities may be conducted by agencies other than B.C. Environment (e.g. the Canadian Wildlife Service, the Royal British Columbia Museum and the Ministry of Lands and Parks).

Wildlife Habitats of Major Concern

KEY TO SYMBOLS

C	= Control of habitat (Crown and private land)
D	= Development of ministry land-use policy
I	= Input into land and water use activities
R	= Research

Habitat Class or Element	*Activities/ Impact*	*Prognosis and General Comments*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Bunchgrass, Sagebrush, and Ponderosa Pine Habitats	Continued loss by encroachment of urban and agriculture development. Livestock grazing may cause impacts on plant composition and quality. Forest encroachment is also a serious problem.	In limited supply; conflicting pressure will continue; in Southern Okanagan Basin Ecosection antelope-brush steppe almost completely alienated.			I C D	I C D	I C D				

Dead and Downed Woody Material	Loss due to harvesting of old-growth forests and prescribed burning on cutover lands. Stand-tending activities in managed forests also a major impact.	Intensive silviculture and continued harvesting of older forests will lead to critical decline in some habitats. Needs to be included in a habitat diversity policy.	I D	I D	I D	I D	I D	I D			I D
Estuaries	Industrial and logging developments lead to destruction (e.g. sorting and dumping grounds).	Ongoing loss or degradation. Habitat protection will try to minimize impacts; purchase of estuarine lands, with rehabilitation, is ongoing.	C I D	C I D							
Garry Oak/ Arbutus Forests	Loss due to urban expansion.	Restricted to southern Georgia Depression Ecoprovince. Residential development is continuing habitat conversion; most remaining habitat occurs on private land.		I C D R							

Habitat Class or Element	*Activities/ Impact*	*Prognosis and General Comments*	*Ecoprovince*								
			Coast and Mtns	*Georgia Depression*	*Southern Interior*	*Southern Interior Mtns*	*Central Interior*	*Sub-Boreal Interior*	*Northern Boreal Mtns*	*Taiga Plains*	*Boreal Plains*
Old-Growth Forests	Loss due to forest harvesting; will not be replaced by intensive silviculture. The loss of old growth results in a lack of natural habitat diversity.	A major concern due to ongoing timber harvests. Need old-growth policy built into guidelines for habitat diversity. Preservation or deferment of ungulate winter ranges does not encompass full range of old-growth habitats. Fragmentation of older stands is a problem. Need to develop innovative ways of providing adequate old growth by such methods as extended rotation. Need information on amounts, sizes, distribution and type required for wildlife.	D R I	D R I	D R I	D R I	D R I	I			I
Riparian Habitats	Losses due to urban, agricultural, and hydroelectric development; continual loss of older forests due to forestry practices.	Ongoing loss. Coastal fish-forestry guidelines should help in coastal areas. Total protection of older forests needed in some watersheds. Much destruction of riparian habitat occurs on private land in Interior and is difficult to protect. Continue to seek co-operation from landowners.	I C D R	I C D R	I C D R	I C D R	I C D R	I C D R	I D	I D	I C D R

Wetlands	Loss due to conversion to other uses of agricultural and urban development.	Encroachment will continue. Attempts to preserve or rehabilitate wetlands will continue; purchase of critical wetlands is ongoing.	C I D	C I D	C I D	C I D	C I D	C I D	D	D	C I D
Wilderness Areas	Loss due to continued expansion of human activities by timber harvesting, recreation, mining, road access, etc..	Wilderness issues are now being addressed, in partial consideration of species that require large tracts of land (e.g. grizzly bear, wolverine, spotted owl); increased public pressure should help wildlife issues.	D I			D I	D I	D I	D I	D I	D I
Wildlife Trees (includes snags, and nesting and perching trees for raptors)	Loss due to urban expansion, timber harvesting and shoreline development; stand-tending activities will have severe impacts on wildlife trees in managed forests.	Present WCB regulations for forest harvesting make solutions difficult. Habitat protection efforts are continuing — to get guidelines for wildlife tree management developed and accepted. Need to include wildlife trees in a habitat diversity policy and continue work in public education.	I D R	I D R	I D R	I D R	I D R	I D R			I D R

Habitat Class or Element	Activities/ Impact	Prognosis and General Comments	Ecoprovince								
			Coast and Mtns	Georgia Depression	Southern Interior	Southern Interior Mtns	Central Interior	Sub-Boreal Interior	Northern Boreal Mtns	Taiga Plains	Boreal Plains
Winter Range Habitats	Loss due to: continued alienation of land for urban and agricultural expansion, harvesting of older forests, and intensive silviculture.	Forestry concerns are being addressed in forestry plans for Timber Supply Areas. Pressure for timber harvesting will continue. Purchase of some key ranges may be a solution. Alienation will continue, so advanced planning is needed.	C I D R	C I D R	C I D R	C I D R	C I D R	C I D R	I D	I D	C I D R
Young Forest Successional Stages *(dominated by herbs, shrubs or deciduous trees)*	Elimination of young forest successional stages by acceleration to closed-canopy conifer plantations — through intensive silviculture, brushing and herbicide spraying. Result is loss of natural habitat diversity.	Need to better understand impact of habitat change especially on ungulate browse, berry supplies for grizzlies and black bears, bird nesting habitat and furbearer prey populations.	I R	I R	I R	I R	I R	I R			I R

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Chapter 6. Managing Wildlife for Public Demands

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2. A licensed guide is defined as a person who, for compensation or reward received or promised, accompanies and assists another person to hunt wildlife. Licensed guides, who prefer to be called "guide outfitters," also include assistant guides; the term is also synonymous with "guide."

Appendix 1. Ecoregions of British Columbia

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GLOSSARY

Early Successional Habitats — Plant communities that represent the beginning or pioneering stage of development. In forests they are represented by grasses, herbs and shrubs, which in time give way to seeding trees and then a mature tree-dominated community.

Endangered Species — Any indigenous species of fauna or flora that is threatened with imminent extinction or extirpation throughout all or a significant portion of its range in British Columbia.

Extinct Species — Any species of fauna or flora that no longer exists anywhere in the world.

Extirpated Species — Any indigenous species of fauna or flora no longer known to exist in the wild in British Columbia, but known to occur elsewhere.

Feral — Any formerly domesticated plant or animal that is not being controlled by humans and is therefore living in a wild state.

Indigenous Species — Plants or animals that occur naturally in British Columbia. The term excludes those species that have been introduced into the province directly, as well as species that have been introduced into adjacent jurisdictions and then have migrated into the province.

Integrated Resource Management — Land management that allows for the operation of more than one resource use in the same land area. Integrated resource management considers both competing and complimentary resource values in a comprehensive manner. The goal is to maximize social, environmental and economic benefits with no undue harm to any one resource sector.

Licensed Guide — A person who, for compensation or reward received or promised, accompanies and assists another person to hunt wildlife. Licensed guides, who prefer to be called guide outfitters, also include assistant guides; the term is also synonymous with guide.

Old-Growth Forest — Virgin (previously unharvested) forest — usually a mixture of trees of varying size, age and species. Old-growth forests have been called "steady-state" ecosystems because, among other reasons, they are essentially "mature" and are changing slowly. The age and structure of old growth varies significantly by forest type, and from one biogeoclimatic zone to the next. For example, coastal old-growth forests range from about 200 years old to as much as 1,000 years old. On the other hand, old-growth forests in the B.C. Interior are about 100 years old.

Prescribed Fire — The controlled application of fire to wild land in either its natural or modified state. Prescribed fire occurs under specified environmental conditions that confine the fire to a predetermined area, and that produce the intensity of heat and rate of spread required to meet predetermined resource management objectives.

Riparian Habitat — The natural dwelling place of an animal or plant — on, or in, the bank of a river, pond or small lake.

Sensitive Species — Those species for which population viability is a concern, as indicated by significant downward trends in population numbers or density, and/or habitat changes.

Sustainable Development — Economic and social development within the limits required to sustain long-term environmental health. Such development ensures that our use of the environment and natural resources, today, does not harm the prospects for their use in the future. If we are to achieve sustainable development, we must integrate environmental and economic considerations in decision making and development planning. The concept of sustainable development gained worldwide attention following the release of *Our Common Future* by the World Commission on Environment and Development, in 1987.

Taxonomy — The orderly classification of plants and animals according to their presumed natural relationships.

Threatened Species — Any indigenous species of fauna or flora that is likely to become endangered in British Columbia if the factors affecting its vulnerability are not reversed.

Transect Counts — A systematic approach to sampling a population of plants or animals, by counting only those animals that are observed along a predetermined line and then relating those plants or animals to the total habitat available.

Vulnerable Species — Any indigenous species of flora or fauna that is particularly at risk because of low or declining numbers, occurrence at the fringe of its range or in restricted areas, or for some other reason — but which is not a threatened species.

LIST OF ACRONYMS

CITES — Convention on the International Trade in Endangered Species (wild flora and fauna)

CORE — Conservation and Outdoor Recreation Education Program

COSEWIC — Committee on the Status of Endangered Wildlife in Canada

HCF — Habitat Conservation Fund

RTL — Registered Trapline (System)

QUESTIONNAIRE

Managing Wildlife to 2001: A Discussion Paper

The purpose of this questionnaire is to seek your comments and suggestions about Managing Wildlife to 2001. *We would be grateful if you would complete the questionnaire and return it in the attached self-addressed, stamped envelope. You may enclose additional sheets of paper if required. We will carefully review all the comments received.*

Thank you for your co-operation and advice in planning for the future of this magnificent resource.

1. What city, town or landmark do you live in or near?

   _____

2. What do you think of the writing in *Managing Wildlife to 2001?*

   _____ Clear and understandable
   _____ Adequate
   _____ Too full of jargon
   _____ Confusing
   _____ Too wordy

3. What do you think of the structure of the document?

   _____ Clearly organized
   _____ Adequate
   _____ Confusing
   _____ Too many sections and subsections
   _____ Not enough sections and subsections

4. What do you think of the content of *Managing Wildlife to 2001?*

_____ Adequate
_____ Too specific
_____ Too general
_____ Contains unnecessary sections (specify)

_____

_____

_____

5.(a) Do you agree with the wildlife management goals as set out in chapter 2?

_____ Strongly agree
_____ Mildly agree
_____ Mildly disagree
_____ Strongly disagree
_____ No opinion

5.(b) Do you have any suggestions for revising the goals to better reflect your management views?

_____

_____

_____

6.(a) Do you agree or disagree with the activities that are identified in chapter 4 to meet the challenges of wildlife management?

_____ Strongly agree
_____ Generally agree
_____ Generally disagree
_____ Strongly disagree
_____ No opinion

6.(b) Do you have any suggestions for activities that should be either added to or removed from the list of activities identified in this paper?

_____

_____

_____

7. Are there any areas of wildlife management that you feel are not adequately addressed in *Managing Wildlife to 2001?*

_____ No _____ Yes (please specify)

_____

_____

_____

8.(a) Do you feel that wildlife management as the provincial government currently conducts it meets your interests and needs?

_____ No _____ Yes

8.(b) If you answered no to (a), do the activities set out in *Managing Wildlife to 2001* more closely satisfy your interests and needs?

_____ No _____ Yes

8.(c) If you answered no to (b), please specify the further changes you think should be made in provincial wildlife management.

_____

_____

_____

9. How frequently do you feel a provincial wildlife strategy should be prepared and reviewed by the public?

_____ Every year
_____ Every 2 years
_____ Every 3 years
_____ Every 4 years
_____ Every 5 years
_____ Every 10 years

10. What do you feel is the most effective way for wildlife managers to find out the views and opinions of the public?

_____ Open public meetings
_____ Surveys/questionnaires
_____ Meeting interest groups
_____ Seminars/presentations
_____ Other (please specify)

_____

_____

11. Do you have any additional comments about *Managing Wildlife to 2001?*

_____

_____

_____

If you wish to receive a copy of the results of this questionnaire please fill in your name and address below.

NAME: _____

ADDRESS: _____

_____

_____